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the Bureau of
Navigation, through
Prof. J. H. C. Coffin,
Supt. of Nautical Almanac

13 Dec., 1871.

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THE
AMERICAN EPHEMERIS
AND
NAUTICAL ALMANAC,
FOR THE YEAR
1874.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

C BUREAU OF NAVIGATION,
WASHINGTON,
1871.

~~130.4~~
~~Sci 320.5~~

Per 2908

1871, Dec. 13.
Gift of
the Bureau of Navigation,
through
Prof. J. H. C. Coffin,
Supt. of Nautical Almanac.

PREFACE.

By direction of the Bureau of Navigation, and
with the compliments of
PROF. J. H. C. COFFIN, U. S. N.,
Superintendent of the American Ephemeris and
Nautical Almanac.

Please Acknowledge receipt.

as to adapt them to the wants of operators at sea or in the field.

In the volumes for 1870–1874 the ephemeris of Neptune is derived from NEWCOMB'S tables; the ephemerides of the outer planets are given for Washington mean noon instead of sidereal 0^h; and hourly differences, instead of the logarithms, for interpolation; new places adopted for the standard stars; some changes made in the pages of occultations; and the table of positions of Observatories revised.

J. H. C. COFFIN,
Prof. Math. U. S. Navy, Superintendent.

WASHINGTON, *October* 1, 1871.

~~130.4~~
~~Sci 320.5~~

Per 2208

PREFACE.

THE preparation of the *American Ephemeris and Nautical Almanac* was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation and the values of the constants adopted will be found in the Preface and Appendix of the first volume, for the year 1855.

In the volume for 1865 the star ephemeris was greatly enlarged; new places of the stars adopted; the form for moon culminations and moon-culminating stars changed so that less space was required; mean solar time, instead of sidereal time, used in the dates of the ephemeris for the meridian of Washington; BESSEL'S notation in the formulæ for star-reductions substituted for BAILY'S. Several other changes of less importance were also made.

In the volume for 1869 some slight changes were made in the ephemerides of Venus and Mars, and in the arrangement of the stars; and the explanations of the arrangement and use of the tables were revised so as to adapt them to the wants of operators at sea or in the field.

In the volumes for 1870–1874 the ephemeris of Neptune is derived from NEWCOMB'S tables; the ephemerides of the outer planets are given for Washington mean noon instead of sidereal 0^h; and hourly differences, instead of the logarithms, for interpolation; new places adopted for the standard stars; some changes made in the pages of occultations; and the table of positions of Observatories revised.

J. H. C. COFFIN,
Prof. Math. U. S. Navy, Superintendent.

WASHINGTON, *October* 1, 1871.

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CORRECTIONS.

EPHEMERIS FOR 1872.

Page 329, Aug. 6,	Equation of Time,	*for* 43^s	*read* 33^s.

EPHEMERIS FOR 1873.

Page 328, May 23,	Sid. Time of Mean Noon,	*for* $40^s.54$	*read* $30^s.54$.
" 395, June 18.0,	λ,	" 27′ 0″	" 26′ 60″.
" 408, Neptune,	Dec. 27, $-\frac{\kappa^2}{r^3}y$	" $+0.13$	" -0.13.
" 484, Dec. 31,	u,	" 4′	" 54′.
" " "	u',	" 7′	" 57′.
" 487,	Allegheny, Long. *should be*	$+.0082252$	2° 57′ 39″.9.
Appendix, page 3,	line 5 from bottom,	*for* 490	*read* 497.

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1874, WHICH COMPRISES THE LATTER PART OF THE 98TH AND THE BEGINNING OF THE 99TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6587 of the Julian Period;
“ 7382–83 of the Byzantine era;
“ 5634–35 of the Jewish era;
“ 2627 since the foundation of Rome, according to Varro;
“ 2621 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ.
“ 2650 of the Olympiads, or the second year of the 663d Olympiad, commencing in July, 1873, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
“ 2186 of the Grecian era, or the era of the Seleucidæ;
“ 1590 of the era of Diocletian.

The year 1291 of the Mohammedan era, or the era of the Hegira, begins on the 18th of February, 1874.

The first day of January of the year 1874 is the 2,405,525th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	D	Solar Cycle	7
Epact	12	Roman Indiction	2
Lunar Cycle or Golden Number	13	Julian Period	6587

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕ or ♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	1.	♈	Aries.	Autumn signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpio.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer signs.	4.	♋	Cancer.	Winter signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌ Conjunction, or having the same Longitude or Right Ascension.
□ Quadrature, or differing 90° in " " "
☍ Opposition, or differing 180° in " " "

ABBREVIATIONS.

☊	Ascending Node.	°	Degrees.
☋	Descending Node.	′	Minutes of Arc.
N.	North.	″	Seconds of Arc.
S.	South.	^{h}	Hours.
E.	East.	^{m}	Minutes of Time.
W.	West.	^{s}	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	18 47 45.50	11.036	S. 23 0 11.0	+12.60	16 18.40	71.07	3 52.88	1.176
Frid.	2	18 52 10.20	11.022	22 54 55.0	13.74	16 18.40	71.03	4 20.95	1.162
Sat.	3	18 56 34.53	11.007	22 49 11.6	14.87	16 18.39	70.98	4 48.64	1.148
Sun.	4	19 0 58.48	10.990	22 43 1.2	16.00	16 18.38	70.93	5 15.95	1.131
Mon.	5	19 5 22.01	10.972	22 36 23.8	17.13	16 18.36	70.87	5 42.85	1.113
Tues.	6	19 9 45.11	10.952	22 29 19.4	18.24	16 18.33	70.81	6 9.31	1.094
Wed.	7	19 14 7.73	10.932	22 21 48.4	19.35	16 18.30	70.74	6 35.31	1.073
Thur.	8	19 18 29.87	10.912	22 13 51.1	20.44	16 18.26	70.67	7 0.82	1.053
Frid.	9	19 22 51.49	10.890	22 5 27.7	21.53	16 18.21	70.60	7 25.82	1.031
Sat.	10	19 27 12.57	10.867	21 56 38.3	22.60	16 18.16	70.52	7 50.27	1.008
Sun.	11	19 31 33.09	10.844	21 47 23.0	23.66	16 18.11	70.44	8 14.16	0.985
Mon.	12	19 35 53.04	10.820	21 37 42.5	24.71	16 18.05	70.35	8 37.48	0.961
Tues.	13	19 40 12.38	10.794	21 27 36.9	25.75	16 17.98	70.27	9 0.20	0.935
Wed.	14	19 44 31.09	10.767	21 17 6.2	26.80	16 17.91	70.18	9 22.31	0.908
Thur.	15	19 48 49.17	10.739	21 6 10.9	27.81	16 17.84	70.09	9 43.77	0.880
Frid.	16	19 53 6.57	10.709	20 54 51.5	28.81	16 17.76	69.99	10 4.55	0.851
Sat.	17	19 57 23.26	10.680	20 43 8.2	29.80	16 17.68	69.89	10 24.63	0.822
Sun.	18	20 1 39.24	10.651	20 31 1.1	30.77	16 17.60	69.79	10 43.99	0.793
Mon.	19	20 5 54.48	10.620	20 18 30.8	31.74	16 17.51	69.69	11 2 63	0.762
Tues.	20	20 10 8.98	10.588	20 5 37.4	32.68	16 17.42	69.59	11 20.52	0.730
Wed.	21	20 14 22.71	10.555	19 52 21.5	33.61	16 17.33	69.49	11 37.64	0.697
Thur.	22	20 18 35.65	10.522	19 38 43.5	34.54	16 17.24	69.38	11 53.98	0.664
Frid.	23	20 22 47.78	10.489	19 24 43.7	35.43	16 17.13	69.27	12 9.52	0.631
Sat.	24	20 26 59.10	10.455	19 10 22.4	36.33	16 17.02	69.16	12 24.24	0.597
Sun.	25	20 31 9.60	10.420	18 55 40.2	37.19	16 16.91	69.05	12 38.14	0.563
Mon.	26	20 35 19.28	10.386	18 40 37.3	38.04	16 16.79	68.94	12 51.22	0.529
Tues.	27	20 39 28.14	10.351	18 25 14.2	38.88	16 16.67	68.83	13 3.48	0.494
Wed.	28	20 43 36.16	10.316	18 9 31.0	39.69	16 16.55	68.71	13 14.92	0.459
Thur.	29	20 47 43.34	10.282	17 53 28.5	40.49	16 16.42	68.60	13 25.52	0.425
Frid.	30	20 51 49.68	10.247	17 37 7.0	41.29	16 16.28	68.48	13 35.29	0.390
Sat.	31	20 55 55.20	10.212	17 20 26.8	42.06	16 16.14	68.37	13 44.22	0.356
Sun.	32	20 59 59.90	10.178	S. 17 3 28.3	+42.81	16 15.99	68.25	13 52.33	0.321

Note. –Mean Time of the Semidiameter passing may be found by subtracting $0^s.19$ from the Sidereal Time. + prefixed to the hourly change of declination, indicates that north declinations are increasing, and south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	18 47 44.81	11.034	S. 23 0 11.8	+12.59	3 52.80	1.176	18 43 52.01
Frid.	2	18 52 9.43	11.019	22 54 56.0	13.73	4 20.86	1.162	18 47 48.57
Sat.	3	18 56 33.68	11.004	22 49 12.8	14.86	4 48.55	1.148	18 51 45.13
Sun.	4	19 0 57.54	10.987	22 43 2.5	15.99	5 15.85	1.131	18 55 41.69
Mon.	5	19 5 20.99	10.969	22 36 25.3	17.12	5 42.75	1.113	18 59 38.24
Tues.	6	19 9 44.00	10.950	22 29 21.2	18.23	6 9.20	1.094	19 3 34.80
Wed.	7	19 14 6.55	10.929	22 21 50.5	19.34	6 35.19	1.073	19 7 31.36
Thur.	8	19 18 28.61	10.909	22 13 53.4	20.43	7 0.69	1.053	19 11 27.92
Frid.	9	19 22 50.16	10.887	22 5 30.2	21.52	7 25.69	1.031	19 15 24.47
Sat.	10	19 27 11.17	10.864	21 56 41.1	22.59	7 50.14	1.008	19 19 21.03
Sun.	11	19 31 31.62	10.841	21 47 26.2	23.65	8 14.03	0.985	19 23 17.59
Mon.	12	19 35 51.50	10.817	21 37 46.0	24.70	8 37.35	0.961	19 27 14.15
Tues.	13	19 40 10.78	10.791	21 27 40.7	25.74	9 0.07	0.935	19 31 10.71
Wed.	14	19 44 29.43	10.764	21 17 10.3	26.78	9 22.16	0.908	19 35 7.27
Thur.	15	19 48 47.45	10.736	21 6 15.3	27.80	9 43.63	0.880	19 39 3.82
Frid.	16	19 53 4.79	10.707	20 54 56.2	28.80	10 4.41	0.851	19 43 0.38
Sat.	17	19 57 21.43	10.678	20 43 13.2	29.79	10 24.49	0.822	19 46 56.94
Sun.	18	20 1 37.35	10.649	20 31 6.4	30.76	10 43.85	0.793	19 50 53.50
Mon.	19	20 5 52.54	10.618	20 18 36.3	31.73	11 2.49	0.762	19 54 50.05
Tues.	20	20 10 7.00	10.586	20 5 43.5	32.67	11 20.39	0.730	19 58 46.61
Wed.	21	20 14 20.69	10.553	19 52 28.1	33.60	11 37.52	0.697	20 2 43.17
Thur.	22	20 18 33.58	10.520	19 38 50.3	34.53	11 53.85	0.664	20 6 39.73
Frid.	23	20 22 45.67	10.487	19 24 50.8	35.44	12 9.39	0.631	20 10 36.28
Sat.	24	20 26 56.95	10.453	19 10 29.8	36.32	12 24.11	0.597	20 14 32.84
Sun.	25	20 31 7.42	10.419	18 55 47.9	37.18	12 38.02	0.563	20 18 29.40
Mon.	26	20 35 17.07	10.385	18 40 45.3	38.03	12 51.11	0.529	20 22 25.96
Tues.	27	20 39 25.90	10.350	18 25 22.5	38.86	13 3.39	0.494	20 26 22.51
Wed.	28	20 43 33.89	10.315	18 9 39.7	39.68	13 14.82	0.459	20 30 19.07
Thur.	29	20 47 41.05	10.281	17 53 37.5	40.48	13 25.42	0.425	20 34 15.63
Frid.	30	20 51 47.37	10.246	17 37 16.2	41.28	13 35.18	0.390	20 38 12.19
Sat.	31	20 55 52.87	10.212	17 20 36.3	42.05	13 44.13	0.356	20 42 8.74
Sun.	32	20 59 57.55	10.177	S. 17 3 38.1	+42.80	13 52.25	0.321	20 46 5.30

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^{\mathrm{s}}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	1	280 58 51.6	59 2.4	152.85	+0.47	9.9926545	− 0.2	5 15 16.18
2	2	281 59 59.9	60 10.5	152.85	0.55	.9926556	+ 1.0	5 11 20.28
3	3	283 1 8.2	1 18.6	152.85	0.61	.9926595	2.2	5 7 24.36
4	4	284 2 16.5	2 26.7	152.84	0.65	.9926662	3.4	5 3 28.44
5	5	285 3 24.7	3 34.7	152.84	0.65	.9926757	4.6	4 59 32.53
6	6	286 4 32.8	4 42.7	152.84	0.64	.9926880	5.8	4 55 36.62
7	7	287 5 40.9	5 50.6	152.84	0.59	.9927031	6.9	4 51 40.71
8	8	288 6 48.9	6 58.4	152.83	0.53	.9927208	7.9	4 47 44.80
9	9	289 7 56.7	8 6.2	152.83	0.43	.9927411	8.9	4 43 48.89
10	10	290 9 5.0	9 14.1	152.83	0.33	.9927638	9.9	4 39 52.98
11	11	291 10 13.0	10 22.0	152.83	0.20	.9927887	10.8	4 35 57.07
12	12	292 11 20.9	11 29.7	152.83	+0.07	.9928156	11.6	4 32 1.15
13	13	293 12 28.7	12 37.3	152.82	−0.07	.9928444	12.4	4 28 5.24
14	14	294 13 36.3	13 44.7	152.81	0.20	.9928751	13.1	4 24 9.33
15	15	295 14 43.5	14 51.7	152.79	0.31	.9929075	13.9	4 20 13.41
16	16	296 15 50.3	15 58.4	152.77	0.41	.9929417	14.6	4 16 17.50
17	17	297 16 56.6	17 4.5	152.75	0.47	.9929775	15.3	4 12 21.59
18	18	298 18 2.3	18 10.0	152.72	0.49	.9930149	15.9	4 8 25.68
19	19	299 19 7.4	19 14.9	152.69	0.49	.9930538	16.6	4 4 29.77
20	20	300 20 11.7	20 19.0	152.66	0.46	.9930942	17.2	4 0 33.86
21	21	301 21 15.2	21 22.4	152.62	0.40	.9931362	17.9	3 56 37.95
22	22	302 22 17.7	22 24.9	152.58	0.31	.9931798	18.6	3 52 42.04
23	23	303 23 19.1	23 25.9	152.54	0.22	.9932253	19.4	3 48 46.12
24	24	304 24 19.4	24 26.0	152.49	−0.10	.9932726	20.1	3 44 50.21
25	25	305 25 18.6	25 25.1	152.44	+0.03	.9933218	20.9	3 40 54.30
26	26	306 26 16.6	26 22.9	152.39	0.16	.9933731	21.8	3 36 58.39
27	27	307 27 13.3	27 19.4	152.34	0.28	.9934266	22.7	3 33 2.48
28	28	308 28 8.7	28 14.6	152.28	0.41	.9934824	23.7	3 29 6.56
29	29	309 29 2.9	29 8.7	152.23	0.51	.9935406	24.7	3 25 10.65
30	30	310 29 55.9	30 1.6	152.18	0.59	.9936012	25.8	3 21 14.74
31	31	311 30 47.8	30 53.3	152.13	0.65	.9936642	26.8	3 17 18.83
32	32	312 31 38.6	31 43.9	152.09	+0.66	9.9937297	+27.8	3 13 22.92

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour. $-9^s.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 38.0	15 33.8	57 15.8	−1.26	57 0.3	−1.31	11 21.1	2.40	12.7
2	15 29.4	15 24.9	56 41.2	1.35	56 27.8	1.38	12 18.2	2.34	13.7
3	15 20.4	15 15.9	56 11.3	1.38	55 54.8	1.36	13 12.9	2.21	14.7
4	15 11.5	15 7.3	55 38.6	1.32	55 23.1	1.26	14 4.0	2.05	15.7
5	15 3.3	14 59.6	55 8.5	1.17	54 55.0	1.06	14 51.3	1.89	16.7
6	14 56.3	14 53.5	54 43.0	0.94	54 32.6	0.79	15 35.0	1.76	17.7
7	14 51.2	14 49.5	54 24.0	0.63	54 17.6	0.44	16 16.2	1.67	18.7
8	14 48.3	14 47.8	54 13.4	−0.25	54 11.6	−0.05	16 55.7	1.63	19.7
9	14 48.0	14 48.9	54 12.4	+0.17	54 15.7	+0.38	17 34.9	1.64	20.7
10	14 50.6	14 52.9	54 21.6	0.60	54 30.1	0.82	18 14.8	1.69	21.7
11	14 55.9	14 59.6	54 41.3	1.03	54 55.0	1.24	18 56.6	1.80	22.7
12	15 4.0	15 9.0	55 11.1	1.44	55 29.4	1.61	19 41.7	1.96	23.7
13	15 14.5	15 20.5	55 49.6	1.76	56 11.6	1.89	20 30.9	2.15	24.7
14	15 26.8	15 33.4	56 34.9	1.99	56 59.2	2.05	21 25.0	2.35	25.7
15	15 40.2	15 46.9	57 23.9	2.06	57 48.4	2.02	22 23.3	2.50	26.7
16	15 53.4	15 59.6	58 12.4	1.96	58 35.4	1.86	23 24.4	2.57	27.7
17	16 5.5	16 10.9	58 57.0	1.72	59 16.6	1.53	δ		28.7
18	16 15.5	16 19.3	59 33.6	1.29	59 47.5	1.03	0 25.8	2.52	0.2
19	16 22.2	16 24.2	59 58.2	0.75	60 5.5	+0.47	1 25.0	2.40	1.2
20	16 25.3	16 25.4	60 9.5	+0.19	60 10.1	−0.08	2 20.9	2.25	2.2
21	16 24.7	16 23.2	60 7.6	−0.34	60 2.2	0.57	3 13.3	2.12	3.2
22	16 21.1	16 18.4	59 54.1	0.77	59 43.9	0.94	4 3.3	2.04	4.2
23	16 15.1	16 11.4	59 31.8	1.08	59 18.2	1.18	4 52.0	2.02	5.2
24	16 7.4	16 3.2	59 3.5	1.25	58 48.1	1.31	5 40.7	2.05	6.2
25	15 58.8	15 54.4	58 32.3	1.33	58 16.2	1.35	6 30.8	2.12	7.2
26	15 50.0	15 45.6	58 0.0	1.35	57 43.9	1.34	7 22.9	2.22	8.2
27	15 41.3	15 37.0	57 27.9	1.32	57 12.3	1.30	8 17.4	2.31	9.2
28	15 32.8	15 28.7	56 56.8	1.27	56 41.7	1.25	9 13.5	2.36	10.2
29	15 24.6	15 20.7	56 26.8	1.22	56 12.3	1.19	10 9.8	2.33	11.2
30	15 16.8	15 13.1	55 58.2	1.16	55 44.5	1.13	11 4.7	2.23	12.2
31	15 9.5	15 6.0	55 31.2	1.09	55 18.4	1.04	11 56.7	2.09	13.2
32	15 2.7	14 59.6	55 6.2	−0.99	54 54.7	−0.92	12 45.2	1.94	14.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 1.					SATURDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 38 41.17	2.4736	N.26 45 19.3	3.429	0	7 35 59.30	2.3678	N.26 23 19.3	4.175
1	5 41 9.61	2.4744	26 48 40.2	3.266	1	7 38 21.22	2.3629	26 19 4.5	4.317
2	5 43 38.10	2.4751	26 51 51.2	3.102	2	7 40 42.83	2.3578	26 14 41.2	4.459
3	5 46 6.63	2.4756	26 54 52.4	2.938	3	7 43 4.13	2.3526	26 10 9.4	4.600
4	5 48 35.18	2.4759	26 57 43.8	2.773	4	7 45 25.13	2.3475	26 5 29.2	4.739
5	5 51 3.74	2.4761	27 0 25.2	2.608	5	7 47 45.83	2.3424	26 0 40.7	4.877
6	5 53 32.30	2.4761	27 2 56.7	2.443	6	7 50 6.22	2.3372	25 55 44.0	5.014
7	5 56 0.87	2.4760	27 5 18.4	2.279	7	7 52 26.29	2.3319	25 50 39.1	5.150
8	5 58 29.43	2.4758	27 7 30.2	2.114	8	7 54 46.03	2.3264	25 45 26.0	5.286
9	6 0 57.98	2.4756	27 9 32.1	1.949	9	7 57 5.45	2.3209	25 40 4.8	5.420
10	6 3 26.50	2.4752	27 11 24.1	1.784	10	7 59 24.54	2.3153	25 34 35.6	5.552
11	6 5 55.00	2.4748	27 13 6.2	1.620	11	8 1 43.29	2.3097	25 28 58.5	5.683
12	6 8 23.47	2.4742	27 14 38.5	1.455	12	8 4 1.70	2.3040	25 23 13.6	5.813
13	6 10 51.89	2.4734	27 16 0.9	1.290	13	8 6 19.77	2.2983	25 17 20.9	5.943
14	6 13 20.25	2.4724	27 17 13.4	1.125	14	8 8 37.50	2.2926	25 11 20.4	6.072
15	6 15 48.55	2.4712	27 18 16.0	0.961	15	8 10 54.89	2.2869	25 5 12.2	6.200
16	6 18 16.78	2.4700	27 19 8.8	0.798	16	8 13 11.93	2.2810	24 58 56.4	6.326
17	6 20 44.94	2.4686	27 19 51.8	0.635	17	8 15 28.61	2.2751	24 52 33.1	6.450
18	6 23 13.01	2.4671	27 20 25.0	0.471	18	8 17 44.93	2.2691	24 46 2.4	6.574
19	6 25 40.99	2.4655	27 20 48.4	0.308	19	8 20 0.90	2.2631	24 39 24.3	6.696
20	6 28 8.87	2.4637	27 21 2.0	+0.145	20	8 22 16.51	2.2572	24 32 38.9	6.818
21	6 30 36.64	2.4619	27 21 5.9	−0.017	21	8 24 31.76	2.2512	24 25 46.2	6.938
22	6 33 4.30	2.4599	27 21 0.0	0.179	22	8 26 46.65	2.2452	24 18 46.4	7.056
23	6 35 31.83	2.4578	N.27 20 44.4	0.341	23	8 29 1.17	2.2391	N.24 11 39.5	7.173
	FRIDAY 2.					SUNDAY 4.			
0	6 37 59.23	2.4556	N.27 20 19.1	0.502	0	8 31 15.33	2.2330	N.24 4 25.6	7.289
1	6 40 26.49	2.4532	27 19 44.1	0.663	1	8 33 29.12	2.2268	23 57 4.8	7.405
2	6 42 53.61	2.4508	27 18 59.5	0.823	2	8 35 42.54	2.2206	23 49 37.1	7.519
3	6 45 20.58	2.4482	27 18 5.4	0.982	3	8 37 55.58	2.2144	23 42 2.5	7.632
4	6 47 47.39	2.4454	27 17 1.7	1.142	4	8 40 8.25	2.2082	23 34 21.2	7.743
5	6 50 14.02	2.4425	27 15 48.4	1.301	5	8 42 20.55	2.2020	23 26 33.3	7.853
6	6 52 40.48	2.4395	27 14 25.6	1.459	6	8 44 32.49	2.1958	23 18 38.9	7.962
7	6 55 6.76	2.4364	27 12 53.3	1.616	7	8 46 44.06	2.1895	23 10 37.9	8.070
8	6 57 32.85	2.4332	27 11 11.6	1.772	8	8 48 55.24	2.1832	23 2 30.5	8.176
9	6 59 58.75	2.4300	27 9 20.6	1.928	9	8 51 6.03	2.1769	22 54 16.8	8.281
10	7 2 24.45	2.4266	27 7 20.2	2.084	10	8 53 16.45	2.1707	22 45 56.8	8.385
11	7 4 49.94	2.4230	27 5 10.5	2.240	11	8 55 26.51	2.1645	22 37 30.6	8.489
12	7 7 15.20	2.4193	27 2 51.5	2.394	12	8 57 36.20	2.1583	22 28 58.2	8.591
13	7 9 40.24	2.4155	27 0 23.3	2.546	13	8 59 45.51	2.1520	22 20 19.7	8.691
14	7 12 5.05	2.4117	26 57 46.0	2.699	14	9 1 54.44	2.1457	22 11 35.3	8.789
15	7 14 29.64	2.4078	26 54 59.5	2.851	15	9 4 2.99	2.1394	22 2 45.1	8.886
16	7 16 53.99	2.4037	26 52 3.9	3.001	16	9 6 11.17	2.1331	21 53 49.0	8.984
17	7 19 18.08	2.3994	26 48 59.3	3.151	17	9 8 18.97	2.1269	21 44 47.1	9.080
18	7 21 41.91	2.3951	26 45 45.8	3.300	18	9 10 26.40	2.1207	21 35 39.4	9.175
19	7 24 5.49	2.3907	26 42 23.4	3.448	19	9 12 33.46	2.1145	21 26 26.1	9.268
20	7 26 28.81	2.3863	26 38 52.1	3.596	20	9 14 40.15	2.1083	21 17 7.3	9.359
21	7 28 51.85	2.3817	26 35 11.9	3.742	21	9 16 46.46	2.1021	21 7 43.1	9.449
22	7 31 14.61	2.3771	26 31 23.0	3.887	22	9 18 52.40	2.0960	20 58 13.5	9.538
23	7 33 37.09	2.3725	26 27 25.5	4.031	23	9 20 57.98	2.0900	20 48 38.5	9.627
24	7 35 59.30	2.3678	N.26 23 19.3	4.175	24	9 23 3.20	2.0839	N.20 38 58.2	9.715

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
		MONDAY 5.					WEDNESDAY 7.		
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 23 3.20	2.0839	N.20 38 58.2	9.715	0	10 56 47.70	1.8419	N.11 33 25.9	12.628
1	9 25 8.05	2.0777	20 29 12.7	9.801	1	10 58 38.10	1.8383	11 20 47.1	12.665
2	9 27 12.53	2.0717	20 19 22.2	9.885	2	11 0 28.30	1.8349	11 8 6.1	12.702
3	9 29 16.65	2.0657	20 9 26.6	9.968	3	11 2 18.30	1.8315	10 55 22.9	12.737
4	9 31 20.41	2.0597	19 59 26.0	10.051	4	11 4 8.09	1.8281	10 42 37.6	12.772
5	9 33 23.81	2.0537	19 49 20.6	10.132	5	11 5 57.67	1.8247	10 29 50.2	12.806
6	9 35 26.85	2.0477	19 39 10.3	10.212	6	11 7 47.05	1.8214	10 17 0.8	12.840
7	9 37 29.54	2.0418	19 28 55.2	10.291	7	11 9 36.24	1.8182	10 4 9.4	12.873
8	9 39 31.88	2.0359	19 18 35.4	10.368	8	11 11 25.24	1.8151	9 51 16.1	12.905
9	9 41 33.86	2.0301	19 8 11.0	10.445	9	11 13 14.05	1.8120	9 38 20.8	12.936
10	9 43 35.49	2.0243	18 57 42.0	10.521	10	11 15 2.68	1.8090	9 25 23.7	12.966
11	9 45 36.78	2.0186	18 47 8.6	10.595	11	11 16 51.14	1.8061	9 12 24.8	12.996
12	9 47 37.73	2.0129	18 36 30.7	10.669	12	11 18 39.42	1.8033	8 59 24.2	13.025
13	9 49 38.34	2.0072	18 25 48.4	10.741	13	11 20 27.53	1.8005	8 46 21.9	13.053
14	9 51 38.60	2.0015	18 15 1.9	10.812	14	11 22 15.48	1.7979	8 33 17.9	13.081
15	9 53 38.53	1.9960	18 4 11.1	10.882	15	11 24 3.28	1.7953	8 20 12.2	13.108
16	9 55 38.13	1.9905	17 53 16.1	10.951	16	11 25 50.92	1.7927	8 7 5.0	13.133
17	9 57 37.39	1.9850	17 42 17.1	11.018	17	11 27 38.40	1.7901	7 53 56.3	13.157
18	9 59 36.32	1.9795	17 31 14.0	11.085	18	11 29 25.73	1.7877	7 40 46.1	13.181
19	10 1 34.93	1.9741	17 20 6.9	11.150	19	11 31 12.92	1.7854	7 27 34.5	13.205
20	10 3 33.22	1.9687	17 8 56.0	11.215	20	11 32 59.98	1.7831	7 14 21.4	13.228
21	10 5 31.18	1.9634	16 57 41.2	11.279	21	11 34 46.90	1.7809	7 1 7.0	13.251
22	10 7 28.83	1.9582	16 46 22.6	11.341	22	11 36 33.69	1.7787	6 47 51.2	13.273
23	10 9 26.17	1.9530	N.16 35 0.3	11.403	23	11 38 20.36	1.7767	N. 6 34 34.2	13.293
		TUESDAY 6.					THURSDAY 8.		
0	10 11 23.20	1.9479	N.16 23 34.3	11.463	0	11 40 6.90	1.7747	N. 6 21 16.1	13.313
1	10 13 19.92	1.9428	16 12 4.7	11.522	1	11 41 53.32	1.7728	6 7 56.7	13.333
2	10 15 16.34	1.9377	16 0 31.6	11.580	2	11 43 39.64	1.7710	5 54 36.2	13.352
3	10 17 12.45	1.9327	15 48 55.1	11.637	3	11 45 25.85	1.7693	5 41 14.5	13.370
4	10 19 8.26	1.9278	15 37 15.2	11.694	4	11 47 11.96	1.7676	5 27 51.7	13.387
5	10 21 3.79	1.9230	15 25 31.9	11.750	5	11 48 57.97	1.7660	5 14 28.0	13.404
6	10 22 59.03	1.9182	15 13 45.2	11.805	6	11 50 43.88	1.7644	5 1 3.3	13.420
7	10 24 53.98	1.9134	15 1 55.3	11.858	7	11 52 29.70	1.7630	4 47 37.6	13.435
8	10 26 48.64	1.9087	14 50 2.3	11.911	8	11 54 15.44	1.7616	4 34 11.0	13.450
9	10 28 43.02	1.9041	14 38 6.1	11.963	9	11 56 1.10	1.7603	4 20 43.6	13.464
10	10 30 37.13	1.8995	14 26 6.8	12.013	10	11 57 46.68	1.7591	4 7 15.3	13.477
11	10 32 30.96	1.8950	14 14 4.6	12.062	11	11 59 32.19	1.7580	3 53 46.3	13.490
12	10 34 24.53	1.8906	14 1 59.4	12.111	12	12 1 17.64	1.7569	3 40 16.5	13.502
13	10 36 17.83	1.8862	13 49 51.3	12.159	13	12 3 3.02	1.7559	3 26 46.0	13.514
14	10 38 10.87	1.8818	13 37 40.4	12.206	14	12 4 48.34	1.7549	3 13 14.8	13.525
15	10 40 3.65	1.8775	13 25 26.6	12.252	15	12 6 33.61	1.7541	2 59 43.0	13.535
16	10 41 56.18	1.8733	13 13 10.1	12.297	16	12 8 18.83	1.7533	2 46 10.6	13.545
17	10 43 48.46	1.8691	13 0 50.9	12.341	17	12 10 4.01	1.7525	2 32 37.6	13.555
18	10 45 40.48	1.8650	12 48 29.1	12.385	18	12 11 49.14	1.7519	2 19 4.0	13.564
19	10 47 32.26	1.8610	12 36 4.7	12.428	19	12 13 34.24	1.7514	2 5 29.9	13.571
20	10 49 23.81	1.8572	12 23 37.8	12.469	20	12 15 19.31	1.7509	1 51 55.5	13.577
21	10 51 15.13	1.8534	12 11 8.4	12.510	21	12 17 4.35	1.7505	1 38 20.7	13.583
22	10 53 6.22	1.8495	11 58 36.6	12.550	22	12 18 49.37	1.7501	1 24 45.5	13.589
23	10 54 57.08	1.8457	11 46 2.4	12.589	23	12 20 34.37	1.7499	1 11 10.0	13.595
24	10 56 47.70	1.8419	N.11 33 25.9	12.628	24	12 22 19.36	1.7497	N. 0 57 34.2	13.600

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 22 19.36	1.7497	N. 0 57 34.2	13.600
1	12 24 4.34	1.7497	0 43 58.1	13.603
2	12 25 49.32	1.7497	0 30 21.8	13.606
3	12 27 34.30	1.7497	0 16 45.4	13.608
4	12 29 19.28	1.7498	N. 0 3 8.8	13.610
5	12 31 4.27	1.7500	S. 0 10 27.9	13.612
6	12 32 49.28	1.7503	0 24 4.7	13.613
7	12 34 34.31	1.7507	0 37 41.5	13.613
8	12 36 19.36	1.7511	0 51 18.3	13.612
9	12 38 4.44	1.7517	1 4 55.0	13.611
10	12 39 49.56	1.7523	1 18 31.7	13.610
11	12 41 34.71	1.7529	1 32 8.2	13.608
12	12 43 19.90	1.7536	1 45 44.6	13.605
13	12 45 5.14	1.7544	1 59 20.8	13.601
14	12 46 50.43	1.7553	2 12 56.7	13.597
15	12 48 35.78	1.7563	2 26 32.4	13.592
16	12 50 21.19	1.7574	2 40 7.8	13.586
17	12 52 6.67	1.7586	2 53 42.8	13.580
18	12 53 52.22	1.7598	3 7 17.3	13.573
19	12 55 37.85	1.7610	3 20 51.4	13.566
20	12 57 23.55	1.7623	3 34 25.1	13.559
21	12 59 9.33	1.7637	3 47 58.4	13.550
22	13 0 55.20	1.7653	4 1 31.1	13.540
23	13 2 41.17	1.7671	S. 4 15 3.2	13.530

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 4 27.25	1.7688	S. 4 28 34.7	13.519
1	13 6 13.43	1.7705	4 42 5.5	13.508
2	13 7 59.71	1.7723	4 55 35.6	13.496
3	13 9 46.10	1.7742	5 9 5.0	13.483
4	13 11 32.61	1.7762	5 22 33.6	13.470
5	13 13 19.24	1.7782	5 36 1.4	13.456
6	13 15 6.00	1.7804	5 49 28.3	13.441
7	13 16 52.89	1.7826	6 2 54.3	13.426
8	13 18 39.92	1.7849	6 16 19.3	13.410
9	13 20 27.08	1.7873	6 29 43.4	13.393
10	13 22 14.39	1.7898	6 43 6.4	13.375
11	13 24 1.86	1.7924	6 56 28.3	13.357
12	13 25 49.48	1.7950	7 9 49.2	13.338
13	13 27 37.26	1.7977	7 23 8.9	13.318
14	13 29 25.21	1.8005	7 36 27.4	13.297
15	13 31 13.32	1.8033	7 49 44.6	13.276
16	13 33 1.61	1.8062	8 3 0.5	13.254
17	13 34 50.08	1.8092	8 16 15.1	13.232
18	13 36 38.72	1.8123	8 29 28.3	13.209
19	13 38 27.55	1.8155	8 42 40.1	13.185
20	13 40 16.58	1.8189	8 55 50.4	13.160
21	13 42 5.82	1.8223	9 8 59.2	13.134
22	13 43 55.26	1.8256	9 22 6.5	13.107
23	13 45 44.90	1.8290	9 35 12.1	13.080
24	13 47 34.74	1.8325	S. 9 48 16.1	13.053

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 47 34.74	1.8325	S. 9 48 16.1	13.053
1	13 49 24.80	1.8362	10 1 18.4	13.025
2	13 51 15.09	1.8400	10 14 18.9	12.995
3	13 53 5.61	1.8439	10 27 17.7	12.964
4	13 54 56.36	1.8477	10 40 14.6	12.932
5	13 56 47.34	1.8516	10 53 9.6	12.900
6	13 58 38.55	1.8556	11 6 2.6	12.867
7	14 0 30.01	1.8597	11 18 53.6	12.833
8	14 2 21.72	1.8639	11 31 42.6	12.799
9	14 4 13.68	1.8681	11 44 29.5	12.764
10	14 6 5.90	1.8725	11 57 14.2	12.727
11	14 7 58.39	1.8770	12 9 56.7	12.690
12	14 9 51.16	1.8815	12 22 37.0	12.652
13	14 11 44.19	1.8861	12 35 15.0	12.613
14	14 13 37.49	1.8907	12 47 50.6	12.572
15	14 15 31.07	1.8954	13 0 23.7	12.531
16	14 17 24.94	1.9002	13 12 54.4	12.490
17	14 19 19.10	1.9052	13 25 22.5	12.448
18	14 21 13.56	1.9102	13 37 48.1	12.404
19	14 23 8.32	1.9152	13 50 11.0	12.359
20	14 25 3.38	1.9202	14 2 31.2	12.313
21	14 26 58.74	1.9253	14 14 48.6	12.267
22	14 28 54.41	1.9305	14 27 3.2	12.220
23	14 30 50.41	1.9359	S. 14 39 15.0	12.172

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 32 46.73	1.9413	S. 14 51 23.8	12.122
1	14 34 43.37	1.9468	15 3 29.6	12.071
2	14 36 40.34	1.9523	15 15 32.3	12.019
3	14 38 37.65	1.9579	15 27 31.9	11.966
4	14 40 35.29	1.9635	15 39 28.3	11.912
5	14 42 33.28	1.9693	15 51 21.4	11.857
6	14 44 31.61	1.9751	16 3 11.2	11.802
7	14 46 30.29	1.9810	16 14 57.6	11.745
8	14 48 29.33	1.9870	16 26 40.5	11.687
9	14 50 28.73	1.9930	16 38 20.0	11.628
10	14 52 28.49	1.9990	16 49 55.9	11.567
11	14 54 28.62	2.0051	17 1 28.1	11.505
12	14 56 29.11	2.0113	17 12 56.5	11.442
13	14 58 29.98	2.0176	17 24 21.2	11.379
14	15 0 31.23	2.0239	17 35 42.0	11.314
15	15 2 32.85	2.0303	17 46 58.9	11.248
16	15 4 34.86	2.0367	17 58 11.8	11.180
17	15 6 37.26	2.0433	18 9 20.6	11.112
18	15 8 40.06	2.0499	18 20 25.2	11.042
19	15 10 43.25	2.0565	18 31 25.6	10.971
20	15 12 46.84	2.0631	18 42 21.8	10.899
21	15 14 50.83	2.0699	18 53 13.6	10.826
22	15 16 55.23	2.0767	19 4 1.0	10.751
23	15 19 0.04	2.0835	19 14 43.8	10.674
24	15 21 5.25	2.0904	S. 19 25 21.9	10.596

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 13.					THURSDAY 15.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 21 5.25	2.0904	S. 19 25 21.9	10.596	0	17 9 52.44	2.4417	S. 25 58 27.4	5.218
1	15 23 10.88	2.0973	19 35 55.3	10.518	1	17 12 19.15	2.4484	26 3 36.1	5.070
2	15 25 16.93	2.1043	19 46 24.1	10.439	2	17 14 46.25	2.4550	26 8 35.9	4.920
3	15 27 23.40	2.1113	19 56 48.1	10.358	3	17 17 13.75	2.4616	26 13 26.6	4.769
4	15 29 30.29	2.1183	20 7 7.1	10.275	4	17 19 41.64	2.4680	26 18 8.2	4.617
5	15 31 37.61	2.1255	20 17 21.1	10.191	5	17 22 9.91	2.4744	26 22 40.7	4.464
6	15 33 45.35	2.1327	20 27 30.1	10.106	6	17 24 38.57	2.4806	26 27 4.0	4.309
7	15 35 53.52	2.1399	20 37 33.9	10.019	7	17 27 7.60	2.4868	26 31 17.9	4.153
8	15 38 2.13	2.1471	20 47 32.5	9.931	8	17 29 37.00	2.4929	26 35 22.4	3.996
9	15 40 11.18	2.1543	20 57 25.7	9.842	9	17 32 6.76	2.4989	26 39 17.4	3.837
10	15 42 20.66	2.1616	21 7 13.5	9.752	10	17 34 36.88	2.5049	26 43 2.8	3.676
11	15 44 30.58	2.1690	21 16 55.9	9.660	11	17 37 7.35	2.5107	26 46 38.6	3.515
12	15 46 40.94	2.1764	21 26 32.7	9.566	12	17 39 38.17	2.5163	26 50 4.7	3.353
13	15 48 51.74	2.1838	21 36 3.8	9.471	13	17 42 9.33	2.5219	26 53 21.0	3.190
14	15 51 2.99	2.1912	21 45 29.2	9.375	14	17 44 40.81	2.5274	26 56 27.4	3.025
15	15 53 14.69	2.1986	21 54 48.8	9.277	15	17 47 12.62	2.5328	26 59 23.9	2.859
16	15 55 26.83	2.2061	22 4 2.5	9.177	16	17 49 44.75	2.5380	27 2 10.4	2.692
17	15 57 39.42	2.2136	22 13 10.1	9.076	17	17 52 17.18	2.5432	27 4 46.9	2.523
18	15 59 52.47	2.2211	22 22 11.7	8.974	18	17 54 49.92	2.5482	27 7 13.2	2.353
19	16 2 5.97	2.2286	22 31 7.1	8.871	19	17 57 22.95	2.5530	27 9 29.3	2.182
20	16 4 19.92	2.2361	22 39 56.2	8.766	20	17 59 56.27	2.5576	27 11 35.2	2.011
21	16 6 34.31	2.2437	22 48 39.0	8.659	21	18 2 29.88	2.5622	27 13 30.7	1.838
22	16 8 49.16	2.2513	22 57 15.4	8.551	22	18 5 3.76	2.5666	27 15 15.8	1.665
23	16 11 4.46	2.2589	S. 23 5 45.2	8.442	23	18 7 37.89	2.5709	S. 27 16 50.5	1.491
WEDNESDAY 14.					FRIDAY 16.				
0	16 13 20.22	2.2665	S. 23 14 8.4	8.331	0	18 10 12.27	2.5751	S. 27 18 14.7	1.315
1	16 15 36.44	2.2740	23 22 24.9	8.218	1	18 12 46.90	2.5791	27 19 28.3	1.139
2	16 17 53.11	2.2815	23 30 34.6	8.104	2	18 15 21.77	2.5830	27 20 31.4	0.962
3	16 20 10.22	2.2891	23 38 37.4	7.989	3	18 17 56.87	2.5867	27 21 23.8	0.784
4	16 22 27.79	2.2967	23 46 33.2	7.872	4	18 20 32.19	2.5903	27 22 5.5	0.605
5	16 24 45.82	2.3042	23 54 22.0	7.753	5	18 23 7.71	2.5937	27 22 36.5	0.426
6	16 27 4.30	2.3118	24 2 3.7	7.633	6	18 25 43.44	2.5970	27 22 56.7	0.246
7	16 29 23.23	2.3193	24 9 38.1	7.512	7	18 28 19.36	2.6001	27 23 6.0	−0.065
8	16 31 42.61	2.3268	24 17 5.2	7.389	8	18 30 55.46	2.6030	27 23 4.5	+0.116
9	16 34 2.45	2.3343	24 24 24.8	7.264	9	18 33 31.74	2.6058	27 22 52.1	0.298
10	16 36 22.73	2.3417	24 31 36.9	7.139	10	18 36 8.18	2.6084	27 22 28.8	0.480
11	16 38 43.45	2.3491	24 38 41.4	7.012	11	18 38 44.76	2.6109	27 21 54.5	0.664
12	16 41 4.62	2.3565	24 45 38.3	6.883	12	18 41 21.49	2.6133	27 21 9.1	0.848
13	16 43 26.23	2.3639	24 52 27.4	6.752	13	18 43 58.35	2.6155	27 20 12.7	1.032
14	16 45 48.28	2.3712	24 59 8.5	6.619	14	18 46 35.34	2.6175	27 19 5.3	1.216
15	16 48 10.77	2.3785	25 5 41.7	6.486	15	18 49 12.44	2.6193	27 17 46.8	1.400
16	16 50 33.70	2.3857	25 12 6.8	6.351	16	18 51 49.64	2.6209	27 16 17.2	1.585
17	16 52 57.06	2.3929	25 18 23.8	6.214	17	18 54 26.94	2.6223	27 14 36.5	1.770
18	16 55 20.85	2.4001	25 24 32.6	6.076	18	18 57 4.33	2.6236	27 12 44.7	1.955
19	16 57 45.07	2.4072	25 30 33.0	5.937	19	18 59 41.79	2.6248	27 10 41.8	2.141
20	17 0 9.71	2.4142	25 36 25.0	5.797	20	19 2 19.31	2.6258	27 8 27.7	2.328
21	17 2 34.77	2.4212	25 42 8.6	5.655	21	19 4 56.88	2.6266	27 6 2.4	2.515
22	17 5 0.25	2.4281	25 47 43.6	5.511	22	19 7 34.50	2.6272	27 3 26.0	2.702
23	17 7 26.14	2.4349	25 53 9.9	5.365	23	19 10 12.15	2.6277	27 0 38.3	2.888
24	17 9 52.44	2.4417	S. 25 58 27.4	5.218	24	19 12 49.83	2.6280	S. 26 57 39.5	3.074

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 17.					MONDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	19 12 49.83	2.6280	S.26 57 39.5	3.074	0	21 16 31.64	2.4808	S.21 5 38.9	11.215
1	19 15 27.52	2.6281	26 54 29.5	3.260	1	21 19 0.32	2.4754	20 54 21.8	11.354
2	19 18 5.21	2.6281	26 51 8.4	3.445	2	21 21 28.68	2.4700	20 42 56.4	11.491
3	19 20 42.90	2.6279	26 47 36.1	3.631	3	21 23 56.73	2.4646	20 31 22.8	11.627
4	19 23 20.57	2.6276	26 43 52.6	3.816	4	21 26 24.45	2.4592	20 19 41.4	11.761
5	19 25 58.22	2.6271	26 39 58.0	4.002	5	21 28 51.84	2.4538	20 7 51.5	11.894
6	19 28 35.83	2.6264	26 35 52.4	4.187	6	21 31 18.90	2.4483	19 55 53.9	12.025
7	19 31 13.39	2.6256	26 31 35.6	4.372	7	21 33 45.63	2.4426	19 43 48.5	12.153
8	19 33 50.90	2.6246	26 27 7.7	4.556	8	21 36 12.03	2.4373	19 31 35.5	12.279
9	19 36 28.35	2.6234	26 22 28.8	4.740	9	21 38 38.10	2.4317	19 19 15.0	12.404
10	19 39 5.72	2.6221	26 17 38.8	4.924	10	21 41 3.84	2.4261	19 6 47.0	12.528
11	19 41 43.00	2.6207	26 12 37.8	5.108	11	21 43 29.24	2.4206	18 54 11.6	12.650
12	19 44 20.20	2.6191	26 7 25.8	5.291	12	21 45 54.30	2.4150	18 41 28.9	12.770
13	19 46 57.30	2.6173	26 2 2.9	5.473	13	21 48 19.03	2.4094	18 28 39.1	12.888
14	19 49 34.28	2.6153	25 56 29.1	5.655	14	21 50 43.43	2.4038	18 15 42.3	13.004
15	19 52 11.14	2.6133	25 50 44.3	5.837	15	21 53 7.49	2.3982	18 2 38.6	13.118
16	19 54 47.87	2.6111	25 44 48.7	6.017	16	21 55 31.21	2.3926	17 49 28.1	13.231
17	19 57 24.46	2.6087	25 38 42.3	6.196	17	21 57 54.60	2.3870	17 36 10.9	13.342
18	20 0 0.92	2.6062	25 32 25.2	6.375	18	22 0 17.66	2.3814	17 22 47.6	13.451
19	20 2 37.23	2.6036	25 25 57.4	6.553	19	22 2 40.39	2.3759	17 9 16.7	13.558
20	20 5 13.36	2.6008	25 19 18.9	6.731	20	22 5 2.78	2.3704	16 55 40.1	13.663
21	20 7 49.32	2.5978	25 12 29.7	6.908	21	22 7 24.84	2.3649	16 41 57.2	13.766
22	20 10 25.10	2.5948	25 5 30.0	7.083	22	22 9 46.57	2.3594	16 28 8.2	13.867
23	20 13 0.70	2.5917	S.24 58 19.8	7.256	23	22 12 7.97	2.3539	S.16 14 13.2	13.966
	SUNDAY 18.					TUESDAY 20.			
0	20 15 36.11	2.5885	S.24 50 59.3	7.429	0	22 14 29.05	2.3485	S.16 0 12.2	14.064
1	20 18 11.32	2.5851	24 43 28.4	7.602	1	22 16 49.80	2.3431	15 46 5.4	14.160
2	20 20 46.32	2.5815	24 35 47.1	7.774	2	22 19 10.23	2.3377	15 31 53.0	14.254
3	20 23 21.10	2.5779	24 27 55.5	7.945	3	22 21 30.33	2.3323	15 17 35.0	14.345
4	20 25 55.66	2.5741	24 19 53.7	8.114	4	22 23 50.11	2.3270	15 3 11.6	14.434
5	20 28 29.99	2.5703	24 11 41.8	8.281	5	22 26 9.58	2.3217	14 48 42.8	14.523
6	20 31 4.10	2.5664	24 3 20.0	8.447	6	22 28 28.73	2.3165	14 34 8.7	14.610
7	20 33 37.97	2.5623	23 54 48.2	8.613	7	22 30 47.57	2.3113	14 19 29.5	14.695
8	20 36 11.58	2.5581	23 46 6.4	8.778	8	22 33 6.10	2.3061	14 4 45.4	14.777
9	20 38 44.93	2.5538	23 37 14.8	8.941	9	22 35 24.31	2.3010	13 49 56.3	14.857
10	20 41 18.03	2.5495	23 28 13.5	9.103	10	22 37 42.22	2.2960	13 35 2.4	14.935
11	20 43 50.87	2.5451	23 19 2.5	9.263	11	22 39 59.83	2.2910	13 20 3.9	15.011
12	20 46 23.44	2.5405	23 9 41.9	9.423	12	22 42 17.14	2.2860	13 5 0.9	15.086
13	20 48 55.73	2.5359	23 0 11.8	9.581	13	22 44 34.15	2.2811	12 49 53.5	15.160
14	20 51 27.74	2.5312	22 50 32.3	9.737	14	22 46 50.87	2.2762	12 34 41.7	15.232
15	20 53 59.48	2.5264	22 40 43.4	9.891	15	22 49 7.31	2.2714	12 19 25.6	15.302
16	20 56 30.93	2.5216	22 30 45.3	10.044	16	22 51 23.46	2.2666	12 4 5.4	15.369
17	20 59 2.08	2.5167	22 20 38.1	10.196	17	22 53 39.32	2.2619	11 48 41.3	15.434
18	21 1 32.93	2.5117	22 10 21.8	10.347	18	22 55 54.89	2.2573	11 33 13.3	15.497
19	21 4 3.48	2.5067	21 59 56.6	10.496	19	22 58 10.18	2.2527	11 17 41.6	15.559
20	21 6 33.73	2.5017	21 49 22.4	10.643	20	23 0 25.21	2.2482	11 2 6.2	15.620
21	21 9 3.68	2.4965	21 38 39.4	10.788	21	23 2 39.98	2.2438	10 46 27.2	15.678
22	21 11 33.32	2.4913	21 27 47.8	10.932	22	23 4 54.48	2.2394	10 30 44.8	15.734
23	21 14 2.64	2.4861	21 16 47.6	11.074	23	23 7 8.72	2.2351	10 14 59.1	15.788
24	21 16 31.64	2.4808	S.21 5 38.9	11.215	24	23 9 22.69	2.2308	S. 9 59 10.2	15.841

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 9 22.69	2.2308	S. 9 59 10.2	15.841
1	23 11 36.41	2.2267	9 43 18.2	15.892
2	23 13 49.89	2.2226	9 27 23.2	15.941
3	23 16 3.12	2.2185	9 11 25.2	15.989
4	23 18 16.11	2.2145	8 55 24.5	16.034
5	23 20 28.87	2.2107	8 39 21.2	16.078
6	23 22 41.39	2.2069	8 23 15.2	16.120
7	23 24 53.69	2.2031	8 7 6.7	16.160
8	23 27 5.77	2.1995	7 50 56.0	16.198
9	23 29 17.62	2.1959	7 34 43.0	16.234
10	23 31 29.26	2.1923	7 18 27.9	16.269
11	23 33 40.69	2.1889	7 2 10.7	16.303
12	23 35 51.92	2.1855	6 45 51.5	16.335
13	23 38 2.95	2.1822	6 29 30.5	16.364
14	23 40 13.79	2.1790	6 13 7.8	16.391
15	23 42 24.43	2.1759	5 56 43.5	16.417
16	23 44 34.89	2.1729	5 40 17.7	16.441
17	23 46 45.17	2.1699	5 23 50.5	16.464
18	23 48 55.28	2.1670	5 7 21.9	16.486
19	23 51 5.22	2.1642	4 50 52.1	16.506
20	23 53 14.99	2.1614	4 34 21.2	16.523
21	23 55 24.59	2.1588	4 17 49.3	16.539
22	23 57 34.04	2.1563	4 1 16.5	16.553
23	23 59 43.35	2.1539	S. 3 44 42.9	16.566

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 1 52.51	2.1515	S. 3 28 8.5	16.577
1	0 4 1.53	2.1492	3 11 33.5	16.587
2	0 6 10.42	2.1470	2 54 58.0	16.594
3	0 8 19.17	2.1448	2 38 22.1	16.601
4	0 10 27.80	2.1428	2 21 45.9	16.606
5	0 12 36.31	2.1408	2 5 9.4	16.609
6	0 14 44.70	2.1390	1 48 32.8	16.611
7	0 16 52.98	2.1372	1 31 56.1	16.611
8	0 19 1.16	2.1356	1 15 19.5	16.609
9	0 21 9.25	2.1340	0 58 43.1	16.605
10	0 23 17.24	2.1324	0 42 6.9	16.600
11	0 25 25.14	2.1310	0 25 31.0	16.594
12	0 27 32.95	2.1296	S. 0 8 55.5	16.686
13	0 29 40.69	2.1284	N. 0 7 39.4	16.577
14	0 31 48.36	2.1272	0 24 13.7	16.566
15	0 33 55.95	2.1261	0 40 47.3	16.553
16	0 36 3.48	2.1251	0 57 20.1	16.539
17	0 38 10.96	2.1241	1 13 52.0	16.524
18	0 40 18.38	2.1233	1 30 23.0	16.507
19	0 42 25.76	2.1226	1 46 52.9	16.488
20	0 44 33.10	2.1220	2 3 21.6	16.467
21	0 46 40.39	2.1214	2 19 49.0	16.446
22	0 48 47.65	2.1209	2 36 15.1	16.423
23	0 50 54.89	2.1205	2 52 39.8	16.398
24	0 53 2.12	2.1201	N. 3 9 3.0	16.373

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 53 2.12	2.1201	N. 3 9 3.0	16.373
1	0 55 9.33	2.1199	3 25 24.6	16.346
2	0 57 16.52	2.1198	3 41 44.5	16.317
3	0 59 23.70	2.1197	3 58 2.6	16.286
4	1 1 30.88	2.1197	4 14 18.9	16.254
5	1 3 38.07	2.1198	4 30 33.2	16.221
6	1 5 45.26	2.1200	4 46 45.5	16.187
7	1 7 52.47	2.1203	5 2 55.7	16.151
8	1 9 59.70	2.1207	5 19 3.7	16.114
9	1 12 6.95	2.1211	5 35 9.4	16.075
10	1 14 14.23	2.1216	5 51 12.8	16.034
11	1 16 21.55	2.1222	6 7 13.7	15.993
12	1 18 28.90	2.1228	6 23 12.0	15.950
13	1 20 36.30	2.1236	6 39 7.7	15.906
14	1 22 43.75	2.1245	6 55 0.7	15.861
15	1 24 51.24	2.1254	7 10 51.0	15.814
16	1 26 58.79	2.1264	7 26 38.4	15.766
17	1 29 6.41	2.1274	7 42 22.9	15.716
18	1 31 14.09	2.1286	7 58 4.3	15.664
19	1 33 21.84	2.1298	8 13 42.6	15.612
20	1 35 29.67	2.1312	8 29 17.7	15.558
21	1 37 37.59	2.1326	8 44 49.6	15.503
22	1 39 45.59	2.1340	9 0 18.1	15.446
23	1 41 53.68	2.1356	N. 9 15 43.1	15.388

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 44 1.86	2.1372	N. 9 31 4.7	15.329
1	1 46 10.14	2.1389	9 46 22.7	15.268
2	1 48 18.53	2.1407	10 1 37.0	15.206
3	1 50 27.02	2.1425	10 16 47.5	15.143
4	1 52 35.62	2.1443	10 31 54.2	15.079
5	1 54 44.34	2.1463	10 46 57.0	15.013
6	1 56 53.17	2.1483	11 1 55.8	14.946
7	1 59 2.13	2.1503	11 16 50.6	14.878
8	2 1 11.22	2.1525	11 31 41.2	14.808
9	2 3 20.43	2.1547	11 46 27.6	14.737
10	2 5 29.78	2.1570	12 1 9.7	14.664
11	2 7 39.27	2.1594	12 15 47.4	14.591
12	2 9 48.91	2.1618	12 30 20.7	14.517
13	2 11 58.70	2.1643	12 44 49.5	14.441
14	2 14 8.63	2.1668	12 59 13.6	14.363
15	2 16 18.71	2.1694	13 13 33.0	14.284
16	2 18 28.95	2.1720	13 27 47.7	14.204
17	2 20 39.35	2.1747	13 41 57.6	14.123
18	2 22 49.92	2.1775	13 56 2.6	14.041
19	2 25 0.66	2.1803	14 10 2.6	13.958
20	2 27 11.57	2.1832	14 23 57.5	13.873
21	2 29 22.64	2.1862	14 37 47.3	13.787
22	2 31 33.89	2.1892	14 51 31.9	13.700
23	2 33 45.33	2.1922	15 5 11.2	13.611
24	2 35 56.96	2.1952	N. 15 18 45.3	13.522

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 25.					TUESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 35 56.96	2.1952	N.15 18 45.3	13.522	0	4 25 21.84	2.3648	N.24 2 6.7	7.871
1	2 38 8.77	2.1983	15 32 13.9	13.431	1	4 27 43.82	2.3680	24 9 54.7	7.728
2	2 40 20.76	2.2015	15 45 37.0	13.338	2	4 30 5.99	2.3712	24 17 34.1	7.584
3	2 42 32.94	2.2047	15 58 54.4	13.244	3	4 32 28.36	2.3742	24 25 4.8	7.440
4	2 44 45.32	2.2079	16 12 6.2	13.149	4	4 34 50.91	2.3772	24 32 26.9	7.295
5	2 46 57.90	2.2112	16 25 12.3	13.054	5	4 37 13.63	2.3801	24 39 40.3	7.150
6	2 49 10.67	2.2145	16 38 12.7	12.957	6	4 39 36.51	2.3829	24 46 45.0	7.005
7	2 51 23.64	2.2179	16 51 7.2	12.859	7	4 41 59.57	2.3858	24 53 40.9	6.858
8	2 53 36.82	2.2213	17 3 55.7	12.760	8	4 44 22.80	2.3886	25 0 27.9	6.710
9	2 55 50.20	2.2247	17 16 38.3	12.659	9	4 46 46.20	2.3913	25 7 6.1	6.562
10	2 58 3.79	2.2282	17 29 14.8	12.556	10	4 49 9.76	2.3939	25 13 35.4	6.413
11	3 0 17.59	2.2317	17 41 45.1	12.452	11	4 51 33.47	2.3964	25 19 55.7	6.263
12	3 2 31.60	2.2352	17 54 9.1	12.348	12	4 53 57.33	2.3989	25 26 6.9	6.112
13	3 4 45.82	2.2388	18 6 26.9	12.243	13	4 56 21.34	2.4013	25 32 9.1	5.962
14	3 7 0.26	2.2424	18 18 38.3	12.137	14	4 58 45.49	2.4036	25 38 2.3	5.811
15	3 9 14.91	2.2460	18 30 43.3	12.029	15	5 1 9.77	2.4058	25 43 46.4	5.659
16	3 11 29.78	2.2496	18 42 41.8	11.920	16	5 3 34.19	2.4080	25 49 21.4	5.506
17	3 13 44.87	2.2532	18 54 33.7	11.810	17	5 5 58.74	2.4101	25 54 47.2	5.353
18	3 16 0.17	2.2568	19 6 19.0	11.699	18	5 8 23.41	2.4121	26 0 3.8	5.200
19	3 18 15.69	2.2605	19 17 57.6	11.586	19	5 10 48.20	2.4141	26 5 11.2	5.046
20	3 20 31.44	2.2642	19 29 29.4	11.472	20	5 13 13.10	2.4159	26 10 9.3	4.891
21	3 22 47.41	2.2679	19 40 54.3	11.358	21	5 15 38.10	2.4176	26 14 58.1	4.736
22	3 25 3.60	2.2717	19 52 12.3	11.243	22	5 18 3.20	2.4192	26 19 37.6	4.580
23	3 27 20.01	2.2755	N.20 3 23.4	11.126	23	5 20 28.40	2.4207	N.26 24 7.7	4.424
	MONDAY 26.					WEDNESDAY 28.			
0	3 29 36.65	2.2793	N.20 14 27.4	11.007	0	5 22 53.69	2.4221	N.26 28 28.5	4.268
1	3 31 53.51	2.2830	20 25 24.3	10.888	1	5 25 19.06	2.4235	26 32 39.9	4.112
2	3 34 10.60	2.2867	20 36 14.0	10.768	2	5 27 44.51	2.4248	26 36 41.9	3.955
3	3 36 27.91	2.2904	20 46 56.5	10.647	3	5 30 10.04	2.4259	26 40 34.5	3.798
4	3 38 45.44	2.2941	20 57 31.7	10.524	4	5 32 35.63	2.4269	26 44 17.6	3.640
5	3 41 3.20	2.2978	21 7 59.5	10.401	5	5 35 1.28	2.4279	26 47 51.3	3.482
6	3 43 21.18	2.3016	21 18 19.8	10.277	6	5 37 26.98	2.4287	26 51 15.5	3.324
7	3 45 39.38	2.3053	21 28 32.7	10.152	7	5 39 52.73	2.4295	26 54 30.2	3.166
8	3 47 57.80	2.3090	21 38 38.0	10.025	8	5 42 18.52	2.4301	26 57 35.4	3.009
9	3 50 16.45	2.3127	21 48 35.7	9.897	9	5 44 44.34	2.4306	27 0 31.2	2.850
10	3 52 35.32	2.3163	21 58 25.7	9.769	10	5 47 10.19	2.4310	27 3 17.4	2.691
11	3 54 54.41	2.3199	22 8 7.9	9.639	11	5 49 36.06	2.4314	27 5 54.1	2.532
12	3 57 13.71	2.3235	22 17 42.4	9.508	12	5 52 1.96	2.4317	27 8 21.2	2.373
13	3 59 33.23	2.3271	22 27 9.0	9.377	13	5 54 27.86	2.4316	27 10 38.8	2.214
14	4 1 52.97	2.3307	22 36 27.7	9.245	14	5 56 53.76	2.4316	27 12 46.9	2.055
15	4 4 12.92	2.3343	22 45 38.4	9.112	15	5 59 19.65	2.4315	27 14 45.4	1.895
16	4 6 33.09	2.3379	22 54 41.1	8.977	16	6 1 45.53	2.4313	27 16 34.3	1.736
17	4 8 53.47	2.3414	23 3 35.7	8.841	17	6 4 11.40	2.4309	27 18 13.7	1.577
18	4 11 14.05	2.3449	23 12 22.1	8.705	18	6 6 37.24	2.4303	27 19 43.6	1.418
19	4 13 34.84	2.3483	23 21 0.3	8.568	19	6 9 3.05	2.4297	27 21 3.9	1.259
20	4 15 55.84	2.3517	23 29 30.3	8.431	20	6 11 28.82	2.4291	27 22 14.7	1.101
21	4 18 17.05	2.3551	23 37 52.0	8.292	21	6 13 54.54	2.4284	27 23 16.0	0.942
22	4 20 38.46	2.3584	23 46 5.3	8.152	22	6 16 20.21	2.4275	27 24 7.7	0.783
23	4 23 0.06	2.3616	23 54 10.2	8.012	23	6 18 45.83	2.4264	27 24 50.0	0.625
24	4 25 21.84	2.3648	N.24 2 6.7	7.871	24	6 21 11.38	2.4252	N.27 25 22.8	0.467

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 21 11.38	2.4252	N.27 25 22.8	0.467
1	6 23 36.85	2.4240	27 25 46.1	0.309
2	6 26 2.25	2.4226	27 25 59.9	+0.151
3	6 28 27.56	2.4211	27 26 4.2	−0.006
4	6 30 52.78	2.4195	27 25 59.1	0.163
5	6 33 17.90	2.4177	27 25 44.6	0.319
6	6 35 42.91	2.4159	27 25 20.8	0.475
7	6 38 7.81	2.4140	27 24 47.6	0.632
8	6 40 32.59	2.4119	27 24 5.0	0.788
9	6 42 57.24	2.4097	27 23 13.0	0.944
10	6 45 21.76	2.4075	27 22 11.7	1.099
11	6 47 46.14	2.4051	27 21 1.2	1.253
12	6 50 10.37	2.4027	27 19 41.4	1.406
13	6 52 34.45	2.4001	27 18 12.4	1.559
14	6 54 58.38	2.3974	27 16 34.2	1.712
15	6 57 22.14	2.3946	27 14 46.9	1.864
16	6 59 45.73	2.3916	27 12 50.5	2.016
17	7 2 9.14	2.3885	27 10 45.0	2.168
18	7 4 32.36	2.3854	27 8 30.3	2.319
19	7 6 55.39	2.3823	27 6 6.6	2.468
20	7 9 18.23	2.3791	27 3 34.0	2.616
21	7 11 40.88	2.3757	27 0 52.6	2.764
22	7 14 3.32	2.3721	26 58 2.3	2.912
23	7 16 25.54	2.3684	N.26 55 3.1	3.060

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 18 47.53	2.3647	N.26 51 55.0	3.207
1	7 21 9.30	2.3610	26 48 38.2	3.353
2	7 23 30.85	2.3572	26 45 12.7	3.498
3	7 25 52.17	2.3533	26 41 38.5	3.642
4	7 28 13.25	2.3493	26 37 55.7	3.785
5	7 30 34.08	2.3451	26 34 4.4	3.927
6	7 32 54.66	2.3409	26 30 4.5	4.069
7	7 35 14.99	2.3366	26 25 56.1	4.210
8	7 37 35.06	2.3322	26 21 39.3	4.349
9	7 39 54.86	2.3278	26 17 14.2	4.487
10	7 42 14.40	2.3233	26 12 40.8	4.625
11	7 44 33.66	2.3188	26 7 59.1	4.762
12	7 46 52.65	2.3142	26 3 9.2	4.899
13	7 49 11.36	2.3094	25 58 11.2	5.035
14	7 51 29.78	2.3046	25 53 5.1	5.170
15	7 53 47.91	2.2998	25 47 50.9	5.303
16	7 56 5.75	2.2949	25 42 28.8	5.434
17	7 58 23.30	2.2900	25 36 58.8	5.564
18	8 0 40.55	2.2850	25 31 21.0	5.695
19	8 2 57.50	2.2799	25 25 35.4	5.825
20	8 5 14.14	2.2748	25 19 42.1	5.954
21	8 7 30.47	2.2696	25 13 41.0	6.081
22	8 9 46.49	2.2644	25 7 32.3	6.207
23	8 12 2.19	2.2591	25 1 16.2	6.331
24	8 14 17.58	2.2538	N.24 54 52.6	6.455

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 14 17.58	2.2538	N.24 54 52.6	6.455
1	8 16 32.64	2.2484	24 48 21.6	6.578
2	8 18 47.38	2.2431	24 41 43.2	6.701
3	8 21 1.81	2.2377	24 34 57.5	6.822
4	8 23 15.91	2.2322	24 28 4.6	6.941
5	8 25 29.67	2.2267	24 21 4.6	7.059
6	8 27 43.10	2.2212	24 13 57.5	7.176
7	8 29 56.20	2.2156	24 6 43.4	7.293
8	8 32 8.97	2.2100	23 59 22.4	7.408
9	8 34 21.40	2.2044	23 51 54.4	7.522
10	8 36 33.49	2.1987	23 44 19.6	7.635
11	8 38 45.24	2.1930	23 36 38.1	7.746
12	8 40 56.65	2.1873	23 28 50.0	7.857
13	8 43 7.72	2.1816	23 20 55.3	7.967
14	8 45 18.45	2.1759	23 12 54.0	8.076
15	8 47 28.83	2.1702	23 4 46.2	8.183
16	8 49 38.87	2.1645	22 56 32.0	8.288
17	8 51 48.56	2.1588	22 48 11.6	8.393
18	8 53 57.91	2.1531	22 39 44.9	8.497
19	8 56 6.91	2.1473	22 31 12.0	8.600
20	8 58 15.57	2.1415	22 22 33.0	8.702
21	9 0 23.89	2.1357	22 13 47.8	8.802
22	9 2 31.86	2.1299	22 4 56.6	8.901
23	9 4 39.48	2.1241	N.21 55 59.6	8.998

SUNDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 6 46.75	2.1183	N.21 46 56.9	9.094

PHASES OF THE MOON.

		d	h	m
○	Full Moon, . . .	2	7	3.3
☾	Last Quarter, . .	10	7	55.2
●	New Moon, . .	17	20	0.1
☽	First Quarter, . .	24	12	42.5
○	Full Moon, . . .	31	23	35.9

		d	h
☾	Apogee, ...	8	14.6
☾	Perigee, ...	20	8.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Arietis	W.	49° 23′ 23″	2688	51° 0′ 19″	2692	52° 37′ 10″	2695	54° 13′ 56″	2700
	Aldebaran	W.	19 20 8	2904	20 52 22	2866	22 25 24	2837	23 59 4	2815
	Regulus	E.	62 51 55	2577	61 12 29	2587	59 33 16	2597	57 54 17	2607
	Jupiter	E.	96 7 3	2578	94 27 38	2587	92 48 25	2596	91 9 25	2606
2	α Arietis	W.	62 15 56	2732	63 51 53	2740	65 27 40	2748	67 3 16	2756
	Aldebaran	W.	31 52 25	2772	33 27 30	2771	35 2 36	2772	36 37 40	2774
	Regulus	E.	49 42 53	2661	48 5 21	2672	46 28 4	2684	44 51 3	2697
	Jupiter	E.	82 57 42	2655	81 20 2	2665	79 42 35	2676	78 5 23	2687
	Spica	E.	103 44 11	2649	102 6 22	2659	100 28 47	2669	98 51 26	2679
3	α Arietis	W.	74 58 22	2803	76 32 46	2813	78 6 57	2823	79 40 55	2833
	Aldebaran	W.	44 31 51	2800	46 6 19	2807	47 40 38	2815	49 14 47	2823
	Regulus	E.	36 50 9	2761	35 14 50	2775	33 39 50	2791	32 5 10	2806
	Jupiter	E.	70 2 56	2741	68 27 10	2751	66 51 38	2763	65 16 21	2774
	Spica	E.	90 48 13	2734	89 12 18	2745	87 36 38	2756	86 1 12	2767
4	α Arietis	W.	87 27 22	2887	88 59 58	2898	90 32 20	2909	92 4 28	2920
	Aldebaran	W.	57 2 49	2866	58 35 51	2876	60 8 41	2884	61 41 20	2894
	Jupiter	E.	57 23 34	2829	55 49 44	2840	54 16 8	2851	52 42 46	2862
	Spica	E.	78 7 43	2823	76 33 45	2834	75 0 1	2845	73 26 32	2856
5	α Arietis	W.	99 41 39	2974	101 12 24	2986	102 42 54	2997	104 13 11	3007
	Aldebaran	W.	69 21 29	2942	70 52 54	2951	72 24 8	2960	73 55 11	2969
	Pollux	W.	25 7 26	2912	26 39 30	2920	28 11 23	2929	29 43 5	2939
	Jupiter	E.	44 59 28	2916	43 27 29	2926	41 55 43	2936	40 24 10	2946
	Spica	E.	65 42 36	2910	64 10 30	2920	62 38 37	2931	61 6 58	2941
	Antares	E.	111 35 1	2903	110 2 46	2912	108 30 43	2922	106 58 52	2932
6	Aldebaran	W.	81 27 35	3013	82 57 32	3022	84 27 18	3029	85 56 55	3037
	Pollux	W.	37 18 49	2980	38 49 27	2989	40 19 54	2996	41 50 12	3004
	Jupiter	E.	32 49 29	2993	31 19 8	3003	29 48 59	3012	28 19 1	3020
	Spica	E.	53 31 47	2989	52 1 20	2998	50 31 5	3006	49 1 0	3015
	Antares	E.	99 22 39	2977	97 51 58	2986	96 21 28	2994	94 51 8	3001
	Sun	E.	136 54 8	3384	135 31 33	3392	134 9 7	3400	132 46 50	3407
7	Aldebaran	W.	93 22 43	3071	94 51 28	3077	96 20 6	3082	97 48 37	3088
	Pollux	W.	49 19 28	3036	50 48 56	3042	52 18 17	3047	53 47 31	3052
	Spica	E.	41 33 11	3055	40 4 6	3061	38 35 9	3069	37 6 21	3076
	Antares	E.	87 21 43	3036	85 52 15	3042	84 22 54	3047	82 53 39	3052
	Sun	E.	125 57 25	3440	124 35 54	3446	123 14 29	3452	121 53 11	3456
8	Pollux	W.	61 12 23	3070	62 41 9	3073	64 9 52	3075	65 38 32	3077
	Regulus	W.	25 2 42	3137	26 30 7	3133	27 57 37	3129	29 25 12	3125
	Spica	E.	29 44 24	3109	28 16 25	3114	26 48 33	3122	25 20 50	3129
	Antares	E.	75 28 49	3071	74 0 4	3074	72 31 23	3076	71 2 44	3078
	Sun	E.	115 7 55	3476	113 47 4	3478	112 26 15	3480	111 5 28	3481
9	Pollux	W.	73 1 36	3078	74 30 13	3076	75 58 52	3074	77 27 33	3072
	Regulus	W.	36 44 5	3110	38 12 3	3107	39 40 4	3103	41 8 10	3098
	Antares	E.	63 39 49	3079	62 11 14	3078	60 42 38	3076	59 13 59	3074
	Sun	E.	104 21 51	3482	103 1 7	3480	101 40 21	3479	100 19 33	3476
10	Pollux	W.	84 51 52	3053	86 20 59	3048	87 50 12	3043	89 19 32	3037
	Regulus	W.	48 30 4	3073	49 58 46	3068	51 27 35	3060	52 56 33	3054

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
1	α Arietis	W.	55° 50′ 36″	2705	57° 27′ 9″	2712	59° 3′ 33″	2718	60° 39′ 49″	2725
	Aldebaran	W.	25 33 13	2799	27 7 42	2786	28 42 28	2779	30 17 23	2774
	Regulus	E.	56 15 31	2617	54 36 59	2628	52 58 42	2639	51 20 40	2650
	Jupiter	E.	89 30 38	2615	87 52 4	2625	86 13 43	2635	84 35 36	2645
2	α Arietis	W.	68 38 41	2765	70 13 55	2774	71 48 57	2784	73 23 46	2794
	Aldebaran	W.	38 12 42	2778	39 47 39	2782	41 22 30	2788	42 57 14	2793
	Regulus	E.	43 14 19	2709	41 37 51	2722	40 1 40	2735	38 25 46	2747
	Jupiter	E.	76 28 25	2697	74 51 41	2708	73 15 12	2719	71 38 57	2729
	Spica	E.	97 14 18	2690	95 37 25	2701	94 0 46	2712	92 24 22	2723
3	α Arietis	W.	81 14 40	2844	82 48 11	2855	84 21 28	2865	85 54 32	2876
	Aldebaran	W.	50 48 45	2831	52 22 33	2839	53 56 10	2848	55 29 35	2857
	Regulus	E.	30 30 50	2821	28 56 50	2838	27 23 12	2856	25 49 57	2874
	Jupiter	E.	63 41 19	2785	62 6 31	2796	60 31 58	2807	58 57 39	2818
	Spica	E.	84 26 1	2779	82 51 5	2789	81 16 23	2801	79 41 56	2811
4	α Arietis	W.	93 36 22	2931	95 8 2	2942	96 39 28	2953	98 10 40	2963
	Aldebaran	W.	63 13 46	2904	64 46 0	2913	66 18 2	2923	67 49 52	2933
	Jupiter	E.	51 9 39	2873	49 36 46	2883	48 4 6	2894	46 31 40	2905
	Spica	E.	71 53 17	2867	70 20 16	2878	68 47 29	2889	67 14 56	2899
5	α Arietis	W.	105 43 15	3018	107 13 6	3029	108 42 43	3039	110 12 7	3049
	Aldebaran	W.	75 26 2	2979	76 56 41	2987	78 27 10	2996	79 57 28	3005
	Pollux	W.	31 14 35	2947	32 45 54	2955	34 17 3	2964	35 48 1	2972
	Jupiter	E.	38 52 49	2956	37 21 41	2965	35 50 45	2975	34 20 1	2985
	Spica	E.	59 35 31	2951	58 4 17	2961	56 33 15	2970	55 2 25	2980
	Antares	E.	105 27 14	2942	103 55 48	2951	102 24 34	2960	100 53 31	2969
6	Aldebaran	W.	87 26 22	3044	88 55 40	3052	90 24 49	3058	91 53 50	3065
	Pollux	W.	43 20 20	3011	44 50 19	3018	46 20 10	3024	47 49 53	3030
	Jupiter	E.	26 49 13	3029	25 19 36	3038	23 50 10	3047	22 20 55	3056
	Spica	E.	47 31 6	3023	46 1 22	3032	44 31 49	3039	43 2 25	3047
	Antares	E.	93 20 57	3009	91 50 56	3016	90 21 3	3023	88 51 19	3030
	Sun	E.	131 24 41	3415	130 2 41	3421	128 40 48	3428	127 19 3	3434
7	Aldebaran	W.	99 17 1	3093	100 45 19	3097	102 13 32	3102	103 41 39	3105
	Pollux	W.	55 16 40	3056	56 45 43	3060	58 14 41	3065	59 43 34	3068
	Spica	E.	35 37 42	3082	34 9 11	3088	32 40 47	3095	31 12 31	3102
	Antares	E.	81 24 30	3056	79 55 27	3061	78 26 30	3065	76 57 38	3068
	Sun	E.	120 31 58	3462	119 10 51	3465	117 49 48	3470	116 28 50	3472
8	Pollux	W.	67 7 10	3078	68 35 47	3078	70 4 23	3078	71 32 59	3078
	Regulus	W.	30 52 51	3122	32 20 34	3119	33 48 21	3116	35 16 11	3113
	Spica	E.	23 53 15	3137	22 25 50	3146	20 58 36	3156	19 31 34	3169
	Antares	E.	69 34 7	3079	68 5 32	3079	66 36 57	3080	65 8 23	3080
	Sun	E.	109 44 43	3483	108 24 0	3483	107 3 17	3483	105 42 34	3483
9	Pollux	W.	78 56 17	3069	80 25 4	3066	81 53 55	3062	83 22 51	3058
	Regulus	W.	42 36 22	3094	44 4 39	3090	45 33 1	3085	47 1 29	3079
	Antares	E.	57 45 18	3072	56 16 34	3069	54 47 46	3065	53 18 54	3061
	Sun	E.	98 58 42	3473	97 37 48	3470	96 16 50	3466	94 55 48	3461
10	Pollux	W.	90 48 59	3030	92 18 35	3022	93 48 20	3015	95 18 14	3007
	Regulus	W.	54 25 39	3047	55 54 54	3039	57 24 18	3031	58 53 52	3022

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Antares	E.	51° 49′ 57″	3057	50° 20′ 55″	3052	48° 51′ 46″	3047	47° 22′ 31″	3041
	Sun	E.	93 34 40	3456	92 13 27	3450	90 52 7	3444	89 30 40	3438
11	Pollux	W.	96 48 18	2998	98 18 33	2989	99 48 59	2981	101 19 36	2970
	Regulus	W.	60 23 38	3013	61 53 35	3004	63 23 43	2994	64 54 3	2983
	Jupiter	W.	26 43 6	3014	28 13 2	3003	29 43 11	2993	31 13 33	2981
	Antares	E.	39 54 18	3005	38 24 12	2997	36 53 55	2988	35 23 27	2979
	Sun	E.	82 41 22	3396	81 19 1	3387	79 56 30	3377	78 33 47	3366
12	Regulus	W.	72 29 11	2927	74 0 56	2913	75 32 58	2900	77 5 17	2887
	Jupiter	W.	38 48 58	2922	40 20 49	2909	41 52 56	2896	43 25 20	2882
	Spica	W.	18 36 46	2999	20 7 0	2976	21 37 43	2954	23 8 54	2932
	Antares	E.	27 48 10	2930	26 16 29	2919	24 44 34	2909	23 12 26	2899
	Sun	E.	71 36 59	3306	70 12 55	3294	68 48 36	3280	67 24 1	3265
13	Regulus	W.	84 51 14	2816	86 25 21	2801	87 59 48	2786	89 34 34	2770
	Jupiter	W.	51 11 50	2810	52 46 5	2795	54 20 40	2779	55 55 35	2763
	Spica	W.	30 51 11	2838	32 24 50	2820	33 58 52	2802	35 33 17	2785
	Sun	E.	60 16 52	3192	58 50 33	3176	57 23 55	3161	55 56 59	3144
14	Regulus	W.	97 33 38	2690	99 10 31	2674	100 47 46	2657	102 25 23	2641
	Jupiter	W.	63 55 29	2682	65 32 33	2665	67 10 0	2648	68 47 50	2632
	Spica	W.	43 31 10	2697	45 7 54	2679	46 45 2	2661	48 22 34	2644
	Sun	E.	48 37 21	3063	47 8 26	3046	45 39 10	3030	44 9 34	3014
15	Jupiter	W.	77 2 41	2547	78 42 49	2530	80 23 20	2514	82 4 14	2497
	Spica	W.	56 36 8	2557	58 16 2	2540	59 56 19	2523	61 37 0	2506
	Sun	E.	36 36 36	2935	35 5 2	2921	33 33 10	2908	32 1 1	2895
20	Sun	W.	29 48 0	2514	31 28 54	2507	33 9 57	2504	34 51 5	2501
	α Arietis	E.	67 28 34	2224	65 40 42	2227	63 52 54	2230	62 5 11	2234
	Aldebaran	E.	97 43 20	2178	95 54 20	2178	94 5 20	2178	92 16 20	2180
21	Sun	W.	43 17 20	2500	44 58 33	2502	46 39 43	2506	48 20 48	2509
	α Arietis	E.	53 8 35	2268	51 21 49	2279	49 35 18	2289	47 49 3	2302
	Aldebaran	E.	83 12 0	2193	81 23 22	2197	79 34 50	2202	77 46 25	2207
22	Sun	W.	56 44 48	2535	58 25 13	2541	60 5 29	2548	61 45 35	2555
	Fomalhaut	W.	31 40 0	2901	33 12 17	2843	34 45 49	2794	36 20 25	2753
	α Arietis	E.	39 2 59	2387	37 19 5	2410	35 35 45	2437	33 53 3	2467
	Aldebaran	E.	68 46 34	2241	66 59 7	2249	65 11 52	2258	63 24 50	2266
	Pollux	E.	112 39 21	2196	110 50 48	2204	109 2 26	2211	107 14 15	2218
23	Sun	W.	70 3 29	2596	71 42 29	2605	73 21 17	2615	74 59 52	2624
	Fomalhaut	W.	44 24 18	2632	46 2 30	2618	47 41 1	2606	49 19 48	2598
	α Pegasi	W.	30 27 3	4161	31 36 6	3980	32 48 5	3828	34 2 38	3698
	Mars	W.	26 15 10	2533	27 55 38	2538	29 35 59	2544	31 16 11	2551
	Aldebaran	E.	54 33 7	2317	52 47 33	2329	51 2 16	2342	49 17 17	2354
	Pollux	E.	98 16 10	2258	96 29 9	2267	94 42 21	2276	92 55 46	2285
24	Sun	W.	83 9 33	2673	84 46 49	2684	86 23 51	2694	88 0 39	2704
	Fomalhaut	W.	57 35 41	2582	59 15 1	2583	60 54 20	2583	62 33 38	2586
	α Pegasi	W.	40 44 20	3277	42 8 58	3225	43 34 38	3179	45 1 12	3140
	Mars	W.	39 34 39	2591	41 13 47	2599	42 52 43	2608	44 31 27	2618
	Aldebaran	E.	40 37 12	2427	38 54 16	2445	37 11 45	2463	35 29 40	2464

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Antares	E.	45° 53′ 9″	3034	44° 23′ 39″	3028	42° 54′ 1″	3021	41° 24′ 14″	3014
	Sun	E.	88 9 6	3431	86 47 24	3423	85 25 33	3414	84 3 32	3406
11	Pollux	W.	102 50 26	2960	104 21 29	2950	105 52 45	2938	107 24 16	2927
	Regulus	W.	66 24 37	2973	67 55 24	2962	69 26 25	2950	70 57 41	2939
	Jupiter	W.	32 44 9	2970	34 14 59	2959	35 46 3	2946	37 17 23	2935
	Antares	E.	33 52 48	2969	32 21 57	2960	30 50 54	2950	29 19 38	2940
	Sun	E.	77 10 52	3355	75 47 44	3344	74 24 23	3332	73 0 48	3319
12	Regulus	W.	78 37 53	2873	80 10 46	2859	81 43 57	2845	83 17 26	2831
	Jupiter	W.	44 58 2	2869	46 31 1	2854	48 4 19	2840	49 37 55	2825
	Spica	W.	24 40 32	2912	26 12 35	2893	27 45 3	2874	29 17 55	2855
	Antares	E.	21 40 6	2889	20 7 33	2880	18 34 49	2872	17 1 54	2863
	Sun	E.	65 59 9	3251	64 34 0	3237	63 8 35	3222	61 42 52	3208
13	Regulus	W.	91 9 41	2754	92 45 9	2739	94 20 57	2722	95 57 7	2707
	Jupiter	W.	57 30 51	2747	59 6 28	2731	60 42 27	2715	62 18 47	2698
	Spica	W.	37 8 5	2767	38 43 16	2749	40 18 51	2732	41 54 49	2714
	Sun	E.	54 29 43	3128	53 2 7	3112	51 34 12	3096	50 5 57	3078
14	Regulus	W.	104 3 22	2624	105 41 44	2608	107 20 28	2591	108 59 35	2575
	Jupiter	W.	70 26 2	2615	72 4 37	2598	73 43 35	2581	75 22 56	2564
	Spica	W.	50 0 29	2626	51 38 48	2609	53 17 31	2591	54 56 38	2574
	Sun	E.	42 39 38	2997	41 9 22	2981	39 38 46	2966	38 7 51	2950
15	Jupiter	W.	83 45 31	2480	85 27 12	2465	87 9 15	2448	88 51 41	2432
	Spica	W.	63 18 5	2489	64 59 33	2473	66 41 24	2457	68 23 38	2441
	Sun	E.	30 28 36	2883	28 55 56	2873	27 23 3	2863	25 49 57	2855
20	Sun	W.	36 32 17	2499	38 13 32	2497	39 54 49	2498	41 36 5	2499
	α Arietis	E.	60 17 34	2239	58 30 5	2245	56 42 44	2252	54 55 34	2260
	Aldebaran	E.	90 27 22	2181	88 38 26	2183	86 49 33	2186	85 0 44	2189
21	Sun	W.	50 1 49	2513	51 42 44	2517	53 23 33	2523	55 4 14	2528
	α Arietis	E.	46 3 6	2315	44 17 29	2331	42 32 14	2347	40 47 23	2366
	Aldebaran	E.	75 58 8	2213	74 10 0	2219	72 22 1	2226	70 34 12	2233
22	Sun	W.	63 25 32	2563	65 5 18	2571	66 44 53	2579	68 24 17	2588
	Fomalhaut	W.	37 55 54	2719	39 32 9	2690	41 9 2	2666	42 46 27	2647
	α Arietis	E.	32 11 3	2501	30 29 51	2540	28 49 33	2585	27 10 17	2638
	Aldebaran	E.	61 38 0	2275	59 51 24	2285	58 5 3	2296	56 18 57	2307
	Pollux	E.	105 26 15	2227	103 38 27	2234	101 50 50	2241	100 3 24	2249
23	Sun	W.	76 38 15	2634	78 16 24	2643	79 54 21	2653	81 32 4	2663
	Fomalhaut	W.	50 58 46	2592	52 37 52	2587	54 17 5	2584	55 56 22	2583
	α Pegasi	W.	35 19 27	3587	36 38 15	3492	37 58 48	3410	39 20 53	3338
	Mars	W.	32 56 13	2558	34 36 6	2566	36 15 48	2574	37 55 19	2582
	Aldebaran	E.	47 32 36	2367	45 48 14	2381	44 4 12	2396	42 20 31	2411
	Pollux	E.	91 9 24	2294	89 23 15	2303	87 37 20	2313	85 51 39	2322
24	Sun	W.	89 37 14	2715	91 13 34	2725	92 49 41	2735	94 25 34	2746
	Fomalhaut	W.	64 12 52	2589	65 52 2	2593	67 31 7	2597	69 10 6	2601
	α Pegasi	W.	46 28 33	3105	47 56 36	3075	49 25 16	3049	50 54 28	3027
	Mars	W.	46 9 57	2628	47 48 14	2637	49 26 19	2646	51 4 11	2656
	Aldebaran	E.	33 48 4	2505	32 6 58	2529	30 26 25	2555	28 46 28	2583

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
24	Pollux	E.	84° 6′ 11″	2331	82° 20′ 57″	2341	80° 35′ 57″	2350	78° 51′ 11″	2359
25	Sun	W.	96 1 13	2756	97 36 38	2767	99 11 49	2778	100 46 46	2788
	Fomalhaut	W.	70 48 59	2607	72 27 44	2613	74 6 21	2620	75 44 49	2626
	Mars	W.	52 41 50	2666	54 19 16	2675	55 56 29	2685	57 33 29	2695
	α Pegasi	W.	52 24 7	3008	53 54 10	2992	55 24 33	2978	56 55 13	2966
	Pollux	E.	70 10 49	2408	68 27 26	2419	66 44 18	2429	65 1 24	2438
	Regulus	E.	106 38 39	2419	104 55 32	2429	103 12 39	2438	101 29 59	2448
26	Sun	W.	108 38 3	2842	110 11 37	2852	111 44 58	2862	113 18 5	2873
	Fomalhaut	W.	83 54 44	2665	85 32 11	2674	87 9 26	2683	88 46 29	2692
	Mars	W.	65 35 11	2744	67 10 53	2754	68 46 21	2764	70 21 36	2773
	α Pegasi	W.	64 31 26	2935	66 3 1	2932	67 34 39	2931	69 6 19	2931
	α Arietis	W.	20 57 57	3069	22 26 44	3001	23 56 55	2947	25 28 14	2905
	Pollux	E.	56 30 18	2487	54 48 46	2496	53 7 27	2505	51 26 21	2515
	Regulus	E.	92 59 59	2495	91 18 39	2504	89 37 32	2514	87 56 38	2524
	Jupiter	E.	126 29 15	2475	124 47 27	2485	123 5 52	2494	121 24 30	2502
27	Sun	W.	121 0 19	2925	122 32 6	2936	124 3 39	2946	125 34 59	2958
	Fomalhaut	W.	96 48 37	2741	98 24 23	2751	99 59 55	2763	101 35 12	2773
	Mars	W.	78 14 46	2821	79 48 47	2830	81 22 36	2839	82 56 13	2849
	α Pegasi	W.	76 44 20	2942	78 15 46	2946	79 47 6	2951	81 18 20	2956
	α Arietis	W.	33 15 11	2794	34 49 47	2783	36 24 37	2775	37 59 37	2770
	Pollux	E.	43 4 9	2562	41 24 22	2572	39 44 48	2581	38 5 27	2590
	Regulus	E.	79 35 24	2569	77 55 47	2579	76 16 23	2588	74 37 11	2597
	Jupiter	E.	113 0 46	2547	111 20 38	2556	109 40 42	2565	108 0 59	2573
28	Mars	W.	90 41 17	2894	92 13 43	2904	93 45 57	2913	95 17 59	2922
	α Pegasi	W.	88 52 35	2992	90 22 58	3001	91 53 10	3009	93 23 11	3019
	α Arietis	W.	45 55 45	2763	47 31 1	2765	49 6 15	2767	50 41 26	2770
	Aldebaran	W.	16 12 55	3147	17 40 8	3075	19 8 48	3018	20 38 39	2973
	Pollux	E.	29 51 52	2638	28 13 48	2647	26 35 57	2657	24 58 20	2667
	Regulus	E.	66 24 17	2642	64 46 19	2651	63 8 33	2660	61 30 59	2669
	Jupiter	E.	99 45 18	2616	98 6 45	2624	96 28 23	2632	94 50 12	2641
29	Mars	W.	102 55 21	2966	104 26 16	2975	105 57 0	2984	107 27 33	2993
	α Pegasi	W.	100 50 2	3076	102 18 41	3089	103 47 4	3102	105 15 11	3117
	α Arietis	W.	58 36 11	2792	60 10 50	2796	61 45 23	2801	63 19 49	2808
	Aldebaran	W.	28 18 9	2869	29 51 8	2861	31 24 17	2855	32 57 33	2852
	Regulus	E.	53 26 11	2713	51 49 49	2723	50 13 40	2732	48 37 43	2742
	Jupiter	E.	86 42 7	2682	85 5 3	2690	83 28 10	2698	81 51 28	2707
	Spica	E.	107 27 58	2704	105 51 24	2712	104 15 0	2720	102 38 47	2729
30	α Arietis	W.	71 10 0	2839	72 43 37	2845	74 17 6	2853	75 50 25	2860
	Aldebaran	W.	40 44 28	2852	42 17 48	2855	43 51 4	2859	45 24 16	2862
	Regulus	E.	40 41 8	2791	39 6 28	2801	37 32 1	2811	35 57 47	2822
	Jupiter	E.	73 50 40	2747	72 15 3	2755	70 39 36	2763	69 4 20	2771
	Spica	E.	94 40 25	2769	93 5 17	2777	91 30 19	2785	89 55 32	2794
31	α Arietis	W.	83 34 42	2897	85 7 5	2905	86 39 18	2912	88 11 21	2920
	Aldebaran	W.	53 8 51	2887	54 41 26	2894	56 13 53	2899	57 46 13	2905
	Regulus	E.	28 10 23	2883	26 37 43	2898	25 5 22	2914	23 33 21	2933
	Jupiter	E.	61 10 37	2811	59 36 24	2819	58 2 21	2827	56 28 28	2835
	Spica	E.	82 4 17	2835	80 30 34	2842	78 57 1	2851	77 23 39	2859

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	Pollux	E.	77° 6′ 38″	2370	75° 22′ 20″	2380	73° 38′ 16″	2389	71° 54′ 26″	2398
25	Sun	W.	102 21 29	2799	103 55 58	2810	105 30 13	2820	107 4 15	2831
	Fomalhaut	W.	77 23 8	2633	79 1 18	2641	80 39 17	2649	82 17 6	2657
	Mars	W.	59 10 15	2705	60 46 48	2715	62 23 8	2724	63 59 16	2734
	α Pegasi	W.	58 26 8	2957	59 57 15	2950	61 28 31	2943	62 59 55	2938
	Pollux	E.	63 18 43	2448	61 36 16	2458	59 54 3	2467	58 12 4	2477
	Regulus	E.	99 47 32	2458	98 5 19	2467	96 23 19	2476	94 41 32	2486
26	Sun	W.	114 50 59	2883	116 23 39	2894	117 56 6	2905	119 28 19	2915
	Fomalhaut	W.	90 23 20	2701	91 59 59	2710	93 36 25	2720	95 12 38	2731
	Mars	W.	71 56 39	2783	73 31 29	2792	75 6 7	2801	76 40 33	2811
	α Pegasi	W.	70 37 59	2931	72 9 38	2933	73 41 15	2935	75 12 49	2938
	α Arietis	W.	27 0 27	2871	28 33 23	2844	30 6 54	2823	31 40 52	2807
	Pollux	E.	49 45 28	2524	48 4 48	2534	46 24 22	2543	44 44 9	2553
	Regulus	E.	86 15 58	2533	84 35 30	2542	82 55 15	2551	81 15 13	2561
	Jupiter	E.	119 43 20	2512	118 2 23	2520	116 21 38	2530	114 41 6	3538
27	Sun	W.	127 6 5	2968	128 36 58	2978	130 7 38	2989	131 38 5	3000
	Fomalhaut	W.	103 10 15	2785	104 45 3	2797	106 19 35	2809	107 53 51	2821
	Mars	W.	84 29 37	2858	86 2 50	2867	87 35 51	2876	89 8 40	2886
	α Pegasi	W.	82 49 28	2962	84 20 28	2969	85 51 19	2976	87 22 2	2984
	α Arietis	W.	39 34 44	2766	41 9 56	2764	42 45 11	2763	44 20 28	2763
	Pollux	E.	36 26 18	2599	34 47 22	2609	33 8 39	2618	31 30 9	2628
	Regulus	E.	72 58 12	2606	71 19 25	2615	69 40 50	2624	68 2 27	2633
	Jupiter	E.	106 21 27	2582	104 42 7	2591	103 2 59	2599	101 24 3	2607
28	Mars	W.	96 49 50	2931	98 21 30	2940	99 52 58	2949	101 24 15	2958
	α Pegasi	W.	94 53 0	3030	96 22 36	3040	97 51 59	3052	99 21 8	3064
	α Arietis	W.	52 16 33	2773	53 51 36	2777	55 26 34	2782	57 1 26	2787
	Aldebaran	W.	22 9 26	2939	23 40 55	2913	25 12 57	2894	26 45 24	2880
	Pollux	E.	23 20 56	2678	21 43 47	2689	20 6 53	2701	18 30 14	2713
	Regulus	E.	59 53 37	2678	58 16 27	2687	56 39 30	2696	55 2 45	2704
	Jupiter	E.	93 12 13	2649	91 34 25	2657	89 56 48	2666	88 19 22	2674
29	Mars	W.	108 57 54	3002	110 28 4	3010	111 58 4	3019	113 27 53	3028
	α Pegasi	W.	106 43 0	3132	108 10 31	3147	109 37 44	3163	111 4 37	3181
	α Arietis	W.	64 54 7	2813	66 28 18	2819	68 2 21	2826	69 36 15	2833
	Aldebaran	W	34 30 54	2850	36 4 17	2848	37 37 42	2849	39 11 6	2851
	Regulus	E.	47 1 59	2752	45 26 28	2761	43 51 9	2770	42 16 2	2780
	Jupiter	E.	80 14 57	2715	78 38 37	2722	77 2 27	2731	75 26 28	2739
	Spica	E.	101 2 45	2737	99 26 54	2745	97 51 14	2753	96 15 44	2761
30	α Arietis	W.	77 23 35	2867	78 56 36	2875	80 29 27	2882	82 2 9	2889
	Aldebaran	W.	46 57 23	2867	48 30 24	2871	50 3 20	2876	51 36 9	2882
	Regulus	E.	34 23 48	2834	32 50 4	2845	31 16 34	2857	29 43 20	2870
	Jupiter	E.	67 29 14	2779	65 54 19	2788	64 19 35	2795	62 45 1	2803
	Spica	E.	88 20 56	2801	86 46 30	2810	85 12 15	2818	83 38 11	2826
31	α Arietis	W.	89 43 15	2927	91 14 59	2936	92 46 32	2944	94 17 55	2953
	Aldebaran	W.	59 18 26	2911	60 50 31	2918	62 22 27	2924	63 54 15	2931
	Regulus	E.	22 1 44	2953	20 30 32	2975	18 59 48	3001	17 29 37	3030
	Jupiter	E.	54 54 46	2843	53 21 14	2851	51 47 52	2859	50 14 40	2866
	Spica	E.	75 50 27	2866	74 17 25	2875	72 44 34	2883	71 11 53	2891

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	20 59 59.90	10.178	S. 17 3 28.3	+42.81	16 15.99	68.25	13 52.33	0.321
Mon.	2	21 4 3.77	10.144	16 46 11.9	43.55	16 15.83	68.14	13 59.62	0.287
Tues.	3	21 8 6.81	10.109	16 28 38.1	44.27	16 15.67	68.02	14 6.09	0.253
Wed.	4	21 12 9.04	10.075	16 10 47.0	44.97	16 15.51	67.91	14 11.74	0.219
Thur.	5	21 16 10.46	10.042	15 52 39.2	45.67	16 15.34	67.79	14 16.59	0.186
Frid.	6	21 20 11.07	10.009	15 34 15.2	46.34	16 15.17	67.68	14 20.64	0.153
Sat.	7	21 24 10.90	9.977	15 15 35.3	47.00	16 14.99	67.56	14 23.90	0.120
Sun.	8	21 28 9.95	9.944	14 56 39.6	47.64	16 14.81	67.45	14 26.38	0.088
Mon.	9	21 32 8.22	9.912	14 37 28.9	48.25	16 14.62	67.34	14 28.09	0.056
Tues.	10	21 36 5.71	9.880	14 18 3.5	48.86	16 14.43	67.23	14 29.03	+0.024
Wed.	11	21 40 2.45	9.849	13 58 23.7	49.45	16 14.24	67.12	14 29.21	−0.007
Thur.	12	21 43 58.44	9.818	13 38 30.0	50.02	16 14.04	67.01	14 28.65	0.038
Frid.	13	21 47 53.68	9.786	13 18 22.9	50.57	16 13.84	66.90	14 27.35	0.069
Sat.	14	21 51 48.19	9.754	12 58 2.8	51.11	16 13.64	66.79	14 25.30	0.101
Sun.	15	21 55 41.97	9.724	12 37 29.9	51.63	16 13.43	66.69	14 22.52	0.131
Mon.	16	21 59 35.01	9.694	12 16 44.7	52.12	16 13.23	66.58	14 19.02	0.161
Tues.	17	22 3 27.33	9.665	11 55 47.9	52.60	16 13.02	66.48	14 14.80	0.190
Wed.	18	22 7 18.93	9.636	11 34 39.9	53.07	16 12.81	66.38	14 9.86	0.219
Thur.	19	22 11 9.84	9.608	11 13 20.8	53.51	16 12.60	66.28	14 4 23	0.247
Frid.	20	22 15 0.08	9.580	10 51 51.4	53.93	16 12.39	66.18	13 57.93	0.275
Sat.	21	22 18 49.65	9.552	10 30 12.0	54.35	16 12.17	66.09	13 50.97	0.303
Sun.	22	22 22 38.55	9.525	10 8 22.8	54.73	16 11.95	66.00	13 43.34	0.330
Mon.	23	22 26 26.80	9.498	9 46 24.6	55.11	16 11.73	65.91	13 35.05	0.357
Tues.	24	22 30 14.42	9.471	9 24 17.7	55.46	16 11.51	65.82	13 26.14	0.384
Wed.	25	22 34 1.43	9.446	9 2 2.5	55.80	16 11.28	65.74	13 16.62	0.409
Thur.	26	22 37 47.84	9.422	8 39 39.3	56.13	16 11.05	65.65	13 6.50	0.433
Frid.	27	22 41 33.67	9.398	8 17 8.7	56.43	16 10.82	65.57	12 55.00	0.457
Sat.	28	22 45 18.94	9.376	7 54 30.9	56.72	16 10.58	65.49	12 44.55	0.479
Sun.	29	22 49 3.68	9.354	S. 7 31 46.3	+56.98	16 10.34	65.42	12 32.77	0.502

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.
+ prefixed to the hourly change of declination, indicates that north declinations are increasing, and south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	20 59 57.55	10.177	S. 17 3 38.1	+42.80	13 52.25	0.321	20 46 5.30
Mon.	2	21 4 1.40	10.143	16 46 22.0	43.54	13 59.55	0.287	20 50 1.85
Tues.	3	21 8 4.43	10.109	16 28 48.4	44.26	14 6.02	0.253	20 53 58.41
Wed.	4	21 12 6.65	10.075	16 10 57.6	44.96	14 11.69	0.219	20 57 54.96
Thur.	5	21 16 8.06	10.042	15 52 50.1	45.66	14 16.54	0.186	21 1 51.52
Frid.	6	21 20 8.67	10.009	15 34 26.3	46.33	14 20.60	0.153	21 5 48.07
Sat.	7	21 24 8.50	9.976	15 15 46.5	46.99	14 23.87	0.120	21 9 44.63
Sun.	8	21 28 7.55	9.944	14 56 51.0	47.63	14 26.36	0.088	21 13 41.19
Mon.	9	21 32 5.82	9.912	14 37 40.5	48.24	14 28.07	0.056	21 17 37.75
Tues.	10	21 36 3.32	9.880	14 18 15.3	48.85	14 29.02	+0.024	21 21 34.30
Wed.	11	21 40 0.07	9.849	13 58 35.7	49.44	14 29.21	−0.007	21 25 30.86
Thur.	12	21 43 56.07	9.818	13 38 42.1	50.01	14 28.66	0.038	21 29 27.41
Frid.	13	21 47 51.32	9.786	13 18 35.1	50.56	14 27.35	0.069	21 33 23.97
Sat.	14	21 51 45.84	9.755	12 58 15.1	51.11	14 25.32	0.101	21 37 20.52
Sun.	15	21 55 39.63	9.725	12 37 42.3	51.63	14 22.55	0.131	21 41 17.08
Mon.	16	21 59 32.69	9.695	12 16 57.2	52.12	14 19.06	0.161	21 45 13.63
Tues.	17	22 3 25.03	9.666	11 56 0.4	52.60	14 14.84	0.190	21 49 10.19
Wed.	18	22 7 16.65	9.637	11 34 52.4	53.07	14 9.91	0.219	21 53 6.74
Thur.	19	22 11 7.58	9.609	11 13 33.4	53.51	14 4.28	0.247	21 57 3.30
Frid.	20	22 14 57.84	9.581	10 52 4.0	53.93	13 57.99	0.275	22 0 59.85
Sat.	21	22 18 47.44	9.553	10 30 24.5	54.35	13 51.03	0.303	22 4 56.41
Sun.	22	22 22 36.37	9.526	10 8 35.4	54.73	13 43.41	0.330	22 8 52.96
Mon.	23	22 26 24.64	9.499	9 46 37.2	55.11	13 35.12	0.357	22 12 49.52
Tues.	24	22 30 12.29	9.472	9 24 30.2	55.46	13 26.22	0.384	22 16 46.07
Wed.	25	22 33 59.33	9.447	9 2 14.9	55.80	13 16.71	0.409	22 20 42.62
Thur.	26	22 37 45.77	9.423	8 39 51.6	56.13	13 6.60	0.433	22 24 39.17
Frid.	27	22 41 31.63	9.399	8 17 20.9	56.43	12 55.90	0.457	22 28 35.73
Sat.	28	22 45 16.93	9.377	7 54 43.0	56.72	12 44.65	0.479	22 32 32.28
Sun.	29	22 49 1.71	9.354	S. 7 31 58.3	+56.99	12 32.87	0.502	22 36 28.84

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
+9s.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	32	312 31 38.6	31 43.9	152.09	+0.66	9.9937297	+27.8	3 13 22.92
2	33	313 32 28.2	32 33.3	152.04	0.65	.9937976	28.8	3 9 27.01
3	34	314 33 16.7	33 21.7	152.00	0.61	.9938681	29.8	3 5 31.10
4	35	315 34 4.1	34 9.0	151.95	0.54	.9939410	30.8	3 1 35.19
5	36	316 34 50.4	34 55.1	151.91	0.45	.9940162	31.7	2 57 39.28
6	37	317 35 35.7	35 40.2	151.87	0.33	.9940936	32.6	2 53 43.37
7	38	318 36 20.1	36 24.5	151.83	0.21	.9941730	33.4	2 49 47.46
8	39	319 37 3.5	37 7.8	151.78	+0.07	.9942543	34.2	2 45 51.55
9	40	320 37 45.7	37 49.9	151.73	−0.06	.9943376	35.0	2 41 55.64
10	41	321 38 26.8	38 30.8	151.69	0.19	.9944226	35.7	2 37 59.73
11	42	322 39 6.8	39 10.6	151.64	0.30	.9945091	36.3	2 34 3.82
12	43	323 39 45.7	39 49.4	151.59	0.39	.9945970	36.9	2 30 7.91
13	44	324 40 23.4	40 27.0	151.54	0.45	.9946860	37.4	2 26 12.00
14	45	325 40 59.8	41 3.3	151.48	0.50	.9947761	37.8	2 22 16.09
15	46	326 41 34.7	41 38.0	151.42	0.51	.9948672	38.2	2 18 20.18
16	47	327 42 8.2	42 11.3	151.36	0.48	.9949594	38.6	2 14 24.27
17	48	328 42 40.2	42 43.2	151.30	0.43	.9950525	39.0	2 10 28.35
18	49	329 43 10.6	43 13.5	151.23	0.35	.9951464	39.3	2 6 32.44
19	50	330 43 39.2	43 42.0	151.16	0.26	.9952411	39.6	2 2 36.54
20	51	331 44 6.0	44 8.6	151.08	0.14	.9953368	40.0	1 58 40.63
21	52	332 44 30.9	44 33.4	151.00	−0.01	.9954335	40.4	1 54 44.72
22	53	333 44 53.9	44 56.3	150.92	+0.13	.9955313	40.9	1 50 48.81
23	54	334 45 14.9	45 17.2	150.83	0.26	.9956302	41.4	1 46 52.90
24	55	335 45 33.9	45 36.1	150.75	0.39	.9957303	41.9	1 42 57.00
25	56	336 45 50.8	45 52.8	150.66	0.49	.9958317	42.5	1 39 1.09
26	57	337 46 5.7	46 7.6	150.58	0.57	.9959345	43.1	1 35 5.18
27	58	338 46 18.7	46 20.5	150.50	0.62	.9960388	43.7	1 31 9.26
28	59	339 46 29.7	46 31.4	150.42	0.64	.9961447	44.4	1 27 3.36
29	60	340 46 38.8	46 40.4	150.34	+0.63	9.9962522	+45.1	1 23 17.46

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
−9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 2.7	14 59.6	55 6.2	−0.99	54 54.7	−0.92	12 45.2	1.94	14.2
2	14 56.6	14 54.0	54 44.0	0.85	54 34.3	0.77	13 30.1	1.81	15.2
3	14 51.7	14 49.6	54 25.7	0.67	54 18.3	0.55	14 12.2	1.70	16.2
4	14 48.0	14 46.9	54 12.4	0.43	54 8.1	−0.28	14 52.3	1.64	17.2
5	14 46.2	14 46.1	54 5.7	−0.12	54 5.2	+0.04	15 31.4	1.62	18.2
6	14 46.5	14 47.5	54 6.8	+0.22	54 10.6	0.41	16 10.7	1.65	19.2
7	14 49.2	14 51.5	54 16.7	0.61	54 25.2	0.81	16 51.2	1.73	20.2
8	14 54.5	14 58.2	54 36.2	1.02	54 49.7	1.22	17 34.0	1.85	21.2
9	15 2.6	15 7.6	55 5.7	1.43	55 24.1	1.63	18 20.4	2.01	22.2
10	15 13.2	15 19.4	55 44.8	1.82	56 7.6	1.99	19 11.0	2.20	23.2
11	15 26.1	15 33.3	56 32.3	2.13	56 58.6	2.25	20 6.1	2.39	24.2
12	15 40.8	15 48.4	57 26.1	2.32	57 54.2	2.36	21 5.1	2.51	25.2
13	15 56.1	16 3.7	58 22.5	2.35	58 50.4	2.28	22 6.0	2.55	26.2
14	16 11.0	16 17.8	59 17.1	2.16	59 41.9	1.98	23 6.6	2.49	27.2
15	16 23.9	16 29.1	60 4.2	1.74	60 23.5	1.46	δ		28.2
16	16 33.3	16 36.4	60 39.0	1.13	60 50.4	0.77	0 4.9	2.37	29.2
17	16 38.3	16 39.0	60 57.5	+0.40	61 0.0	+0.02	1 0.3	2.25	0.7
18	16 38.5	16 36.8	60 58.0	−0.35	60 51.7	−0.70	1 53.0	2.15	1.7
19	16 33.9	16 30.1	60 41.3	1.02	60 27.4	1.30	2 44.0	2.11	2.7
20	16 25.5	16 20.2	60 10.4	1.52	59 51.0	1.70	3 34.5	2.11	3.7
21	16 14.4	16 8.3	59 29.7	1.83	59 7.2	1.92	4 25.7	2.16	4.7
22	16 2.0	15 55.6	58 43.9	1.95	58 20.5	1.95	5 18.4	2.23	5.7
23	15 49.3	15 43.1	57 57.3	1.92	57 34.5	1.87	6 13.0	2.31	6.7
24	15 37.1	15 31.4	57 12.5	1.79	56 51.5	1.71	7 9.1	2.35	7.7
25	15 26.0	15 20.9	56 31.6	1.61	56 12.9	1.51	8 5.4	2.33	8.7
26	15 16.1	15 11.7	55 55.4	1.40	55 39.3	1.29	9 0.4	2.24	9.7
27	15 7.7	15 4.0	55 24.5	1.18	55 10.9	1.08	9 52.7	2.11	10.7
28	15 0.6	14 57.5	54 58.5	0.98	54 47.3	0.88	10 41.7	1.97	11.7
29	14 54.8	14 52.4	54 37.3	−0.79	54 28.4	−0.69	11 27.3	1.83	12.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 6 46.75	2.1183	N.21 46 56.9	9.094	0	10 42 14.58	1.8736	N.13 0 18.2	12.435
1	9 8 53.68	2.1126	21 37 48.4	9.190	1	10 44 6.88	1.8696	12 47 50.7	12.480
2	9 11 0.26	2.1068	21 28 34.1	9.285	2	10 45 58.94	1.8656	12 35 20.6	12.523
3	9 13 6.50	2.1011	21 19 14.1	9.379	3	10 47 50.75	1.8616	12 22 47.9	12.566
4	9 15 12.39	2.0954	21 9 48.6	9.471	4	10 49 42.33	1.8578	12 10 12.7	12.607
5	9 17 17.94	2.0897	21 0 17.6	9.562	5	10 51 33.69	1.8541	11 57 35.0	12.648
6	9 19 23.15	2.0840	20 50 41.2	9.652	6	10 53 24.83	1.8504	11 44 54.8	12.688
7	9 21 28.02	2.0783	20 40 59.4	9.741	7	10 55 15.75	1.8468	11 32 12.3	12.727
8	9 23 32.54	2.0726	20 31 12.4	9.828	8	10 57 6.45	1.8432	11 19 27.5	12.765
9	9 25 36.72	2.0669	20 21 20.1	9.915	9	10 58 56.93	1.8396	11 6 40.5	12.802
10	9 27 40.56	2.0613	20 11 22.6	10.000	10	11 0 47.20	1.8362	10 53 51.3	12.839
11	9 29 44.07	2.0557	20 1 20.1	10.084	11	11 2 37.27	1.8328	10 40 59.9	12.875
12	9 31 47.25	2.0501	19 51 12.6	10.167	12	11 4 27.14	1.8295	10 28 6.3	12.910
13	9 33 50.09	2.0445	19 41 0.1	10.249	13	11 6 16.81	1.8262	10 15 10.7	12.943
14	9 35 52.59	2.0389	19 30 42.8	10.330	14	11 8 6.28	1.8229	10 2 13.2	12.976
15	9 37 54.76	2.0334	19 20 20.6	10.409	15	11 9 55.56	1.8198	9 49 13.7	13.007
16	9 39 56.60	2.0279	19 9 53.7	10.487	16	11 11 44.65	1.8168	9 36 12.3	13.038
17	9 41 58.11	2.0225	18 59 22.2	10.565	17	11 13 33.56	1.8138	9 23 9.1	13.069
18	9 43 59.30	2.0170	18 48 46.0	10.642	18	11 15 22.30	1.8108	9 10 4.0	13.099
19	9 46 0.16	2.0116	18 38 5.2	10.717	19	11 17 10.86	1.8078	8 56 57.2	13.127
20	9 48 0.70	2.0063	18 27 20.0	10.790	20	11 18 59.24	1.8049	8 43 48.7	13.154
21	9 50 0.92	2.0010	18 16 30.5	10.862	21	11 20 47.45	1.8022	8 30 38.6	13.181
22	9 52 0.82	1.9957	18 5 36.6	10.934	22	11 22 35.50	1.7995	8 17 26.8	13.208
23	9 54 0.40	1.9904	N.17 54 38.4	11.006	23	11 24 23.39	1.7969	N. 8 4 13.5	13.234
	MONDAY 2.					WEDNESDAY 4.			
0	9 55 59.67	1.9852	N.17 43 35.9	11.076	0	11 26 11.13	1.7943	N. 7 50 58.7	13.259
1	9 57 58.63	1.9800	17 32 29.3	11.144	1	11 27 58.71	1.7917	7 37 42.4	13.283
2	9 59 57.27	1.9748	17 21 18.7	11.211	2	11 29 46.14	1.7893	7 24 24.8	13.306
3	10 1 55.61	1.9697	17 10 4.0	11.278	3	11 31 33.43	1.7870	7 11 5.8	13.328
4	10 3 53.64	1.9647	16 58 45.3	11.343	4	11 33 20.58	1.7847	6 57 45.5	13.350
5	10 5 51.37	1.9598	16 47 22.8	11.406	5	11 35 7.59	1.7824	6 44 23.9	13.371
6	10 7 48.81	1.9548	16 35 56.5	11.469	6	11 36 54.47	1.7803	6 31 1.0	13.392
7	10 9 45.95	1.9498	16 24 26.5	11.532	7	11 38 41.22	1.7782	6 17 36.9	13.411
8	10 11 42.79	1.9448	16 12 52.7	11.594	8	11 40 27.85	1.7761	6 4 11.8	13.428
9	10 13 39.33	1.9400	16 1 15.2	11.655	9	11 42 14.35	1.7741	5 50 45.6	13.445
10	10 15 35.59	1.9353	15 49 34.1	11.714	10	11 44 0.74	1.7722	5 37 18.3	13.462
11	10 17 31.57	1.9306	15 37 49.6	11.771	11	11 45 47.02	1.7703	5 23 50.0	13.478
12	10 19 27.26	1.9259	15 26 1.6	11.828	12	11 47 33.18	1.7685	5 10 20.8	13.494
13	10 21 22.67	1.9212	15 14 10.2	11.884	13	11 49 19.24	1.7669	4 56 50.7	13.509
14	10 23 17.80	1.9166	15 2 15.5	11.938	14	11 51 5.21	1.7653	4 43 19.7	13.524
15	10 25 12.66	1.9121	14 50 17.6	11.992	15	11 52 51.08	1.7637	4 29 47.8	13.537
16	10 27 7.25	1.9076	14 38 16.4	12.045	16	11 54 36.85	1.7622	4 16 15.2	13.549
17	10 29 1.57	1.9032	14 26 12.1	12.098	17	11 56 22.54	1.7607	4 2 41.9	13.561
18	10 30 55.63	1.8988	14 14 4.6	12.149	18	11 58 8.14	1.7593	3 49 7.9	13.572
19	10 32 49.43	1.8944	14 1 54.1	12.200	19	11 59 53.66	1.7581	3 35 33.2	13.583
20	10 34 42.97	1.8901	13 49 40.7	12.249	20	12 1 39.11	1.7569	3 21 58.0	13.592
21	10 36 36.24	1.8858	13 37 24.3	12.297	21	12 3 24.49	1.7558	3 8 22.2	13.601
22	10 38 29.26	1.8817	13 25 5.0	12.344	22	12 5 9.80	1.7547	2 54 45.8	13.609
23	10 40 22.04	1.8776	13 12 43.0	12.390	23	12 6 55.05	1.7536	2 41 9.0	13.617
24	10 42 14.58	1.8736	N.13 0 18.2	12.435	24	12 8 40.23	1.7526	N. 2 27 31.8	13.624

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 8 40.23	1.7526	N. 2 27 31.8	13.624
1	12 10 25.36	1.7517	2 13 54.2	13.630
2	12 12 10.44	1.7510	2 0 16.2	13.636
3	12 13 55.48	1.7503	1 46 37.8	13.641
4	12 15 40.48	1.7496	1 32 59.2	13.645
5	12 17 25.44	1.7490	1 19 20.4	13.649
6	12 19 10.36	1.7484	1 5 41.4	13.652
7	12 20 55.25	1.7480	0 52 2.2	13.654
8	12 22 40.12	1.7476	0 38 22.9	13.655
9	12 24 24.97	1.7473	0 24 43.6	13.656
10	12 26 9.80	1.7471	N. 0 11 4.2	13.655
11	12 27 54.62	1.7470	S. 0 2 35.1	13.655
12	12 29 39.44	1.7469	0 16 14.4	13.655
13	12 31 24.25	1.7468	0 29 53.7	13.653
14	12 33 9.06	1.7468	0 43 32.8	13.649
15	12 34 53.87	1.7469	0 57 11.6	13.645
16	12 36 38.69	1.7472	1 10 50.2	13.642
17	12 38 23.53	1.7475	1 24 28.6	13.638
18	12 40 8.39	1.7478	1 38 6.8	13.633
19	12 41 53.27	1.7482	1 51 44.6	13.627
20	12 43 38.17	1.7486	2 5 22.0	13.620
21	12 45 23.10	1.7492	2 18 59.0	13.613
22	12 47 8.07	1.7498	2 32 35.5	13.605
23	12 48 53.08	1.7505	S. 2 46 11.5	13.597

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 50 38.13	1.7512	S. 2 59 47.1	13.588
1	12 52 23.23	1.7521	3 13 22.1	13.577
2	12 54 8.38	1.7530	3 26 56.4	13.566
3	12 55 53.59	1.7540	3 40 30.0	13.554
4	12 57 38.86	1.7551	3 54 2.9	13.542
5	12 59 24.20	1.7562	4 7 35.2	13.530
6	13 1 9.60	1.7573	4 21 6.7	13.518
7	13 2 55.08	1.7586	4 34 37.4	13.504
8	13 4 40.64	1.7600	4 48 7.2	13.489
9	13 6 26.28	1.7614	5 1 36.0	13.474
10	13 8 12.01	1.7629	5 15 3.9	13.459
11	13 9 57.83	1.7645	5 28 30.9	13.443
12	13 11 43.75	1.7661	5 41 57.0	13.426
13	13 13 29.77	1.7678	5 55 22.0	13.407
14	13 15 15.89	1.7696	6 8 45.8	13.388
15	13 17 2.12	1.7715	6 22 8.4	13.368
16	13 18 48.47	1.7734	6 35 29.9	13.348
17	13 20 34.94	1.7754	6 48 50.2	13.327
18	13 22 21.52	1.7774	7 2 9.2	13.306
19	13 24 8.23	1.7796	7 15 26.9	13.283
20	13 25 55.07	1.7818	7 28 43.2	13.260
21	13 27 42.05	1.7842	7 41 58.2	13.237
22	13 29 29.17	1.7866	7 55 11.7	13.213
23	13 31 16.44	1.7890	8 8 23.7	13.189
24	13 33 3.85	1.7916	S. 8 21 34.3	13.164

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 33 3.85	1.7916	S. 8 21 34.3	13.164
1	13 34 51.42	1.7942	8 34 43.3	13.137
2	13 36 39.15	1.7968	8 47 50.7	13.109
3	13 38 27.03	1.7995	9 0 56.4	13.081
4	13 40 15.08	1.8023	9 14 0.4	13.053
5	13 42 3.31	1.8052	9 27 2.7	13.024
6	13 43 51.71	1.8082	9 40 3.3	12.995
7	13 45 40.29	1.8112	9 53 2.1	12.964
8	13 47 29.06	1.8143	10 5 58.9	12.931
9	13 49 18.01	1.8174	10 18 53.7	12.899
10	13 51 7.15	1.8207	10 31 46.6	12.866
11	13 52 56.49	1.8241	10 44 37.6	12.832
12	13 54 46.04	1.8275	10 57 26.5	12.797
13	13 56 35.79	1.8309	11 10 13.3	12.762
14	13 58 25.75	1.8345	11 22 58.0	12.726
15	14 0 15.93	1.8381	11 35 40.4	12.689
16	14 2 6.33	1.8418	11 48 20.6	12.651
17	14 3 56.95	1.8456	12 0 58.5	12.612
18	14 5 47.80	1.8494	12 13 34.1	12.573
19	14 7 38.88	1.8533	12 26 7.3	12.533
20	14 9 30.20	1.8573	12 38 38.1	12.493
21	14 11 21.76	1.8614	12 51 6.4	12.451
22	14 13 13.57	1.8655	13 3 32.2	12.408
23	14 15 5.63	1.8697	S. 13 15 55.4	12.363

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 16 57.93	1.8739	S. 13 28 15.8	12.318
1	14 18 50.49	1.8783	13 40 33.6	12.273
2	14 20 43.32	1.8828	13 52 48.7	12.228
3	14 22 36.43	1.8873	14 5 1.0	12.181
4	14 24 29.81	1.8918	14 17 10.5	12.134
5	14 26 23.45	1.8964	14 29 17.1	12.085
6	14 28 17.37	1.9011	14 41 20.7	12.035
7	14 30 11.58	1.9059	14 53 21.3	11.984
8	14 32 6.08	1.9107	15 5 18.9	11.933
9	14 34 0.86	1.9156	15 17 13.4	11.881
10	14 35 55.94	1.9206	15 29 4.7	11.828
11	14 37 51.33	1.9257	15 40 52.8	11.773
12	14 39 47.02	1.9308	15 52 37.5	11.718
13	14 41 43.02	1.9359	16 4 18.9	11.662
14	14 43 39.33	1.9411	16 15 57.0	11.605
15	14 45 35.95	1.9464	16 27 31.6	11.547
16	14 47 32.90	1.9518	16 39 2.7	11.488
17	14 49 30.17	1.9573	16 50 30.2	11.428
18	14 51 27.77	1.9628	17 1 54.0	11.366
19	14 53 25.70	1.9683	17 13 14.1	11.304
20	14 55 23.97	1.9739	17 24 30.5	11.242
21	14 57 22.57	1.9795	17 35 43.2	11.179
22	14 59 21.51	1.9853	17 46 52.0	11.114
23	15 1 20.80	1.9912	17 57 56.8	11.047
24	15 3 20.46	1.9972	S. 18 8 57.5	10.979

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 3 20.46	1.9972	S.18 8 57.5	10.979
1	15 5 20.47	2.0031	18 19 54.2	10.910
2	15 7 20.83	2.0090	18 30 46.8	10.841
3	15 9 21.54	2.0150	18 41 35.2	10.771
4	15 11 22.62	2.0211	18 52 19.3	10.699
5	15 13 24.07	2.0273	19 2 59.1	10.627
6	15 15 25.89	2.0335	19 13 34.5	10.553
7	15 17 28.09	2.0398	19 24 5.4	10.478
8	15 19 30.67	2.0461	19 34 31.8	10.402
9	15 21 33.62	2.0524	19 44 53.7	10.325
10	15 23 36.96	2.0588	19 55 10.9	10.246
11	15 25 40.69	2.0653	20 5 23.3	10.166
12	15 27 44.80	2.0719	20 15 30.8	10.085
13	15 29 49.31	2.0785	20 25 33.5	10.004
14	15 31 54.22	2.0851	20 35 31.3	9.921
15	15 33 59.52	2.0917	20 45 24.1	9.837
16	15 36 5.22	2.0984	20 55 11.8	9.751
17	15 38 11.33	2.1051	21 4 54.3	9.664
18	15 40 17.84	2.1119	21 14 31.5	9.576
19	15 42 24.76	2.1188	21 24 3.4	9.487
20	15 44 32.09	2.1257	21 33 30.0	9.397
21	15 46 39.84	2.1326	21 42 51.1	9.306
22	15 48 48.00	2.1395	21 52 6.7	9.213
23	15 50 56.58	2.1464	S.22 1 16.7	9.118

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 53 5.57	2.1533	S.22 10 20.9	9.022
1	15 55 14.98	2.1604	22 19 19.3	8.926
2	15 57 24.82	2.1675	22 28 12.0	8.829
3	15 59 35.09	2.1746	22 36 58.8	8.730
4	16 1 45.78	2.1817	22 45 39.6	8.629
5	16 3 56.89	2.1887	22 54 14.3	8.526
6	16 6 8.43	2.1958	23 2 42.7	8.422
7	16 8 20.40	2.2030	23 11 4.9	8.318
8	16 10 32.80	2.2102	23 19 20.9	8.213
9	16 12 45.63	2.2174	23 27 30.5	8.106
10	16 14 58.89	2.2246	23 35 33.6	7.997
11	16 17 12.59	2.2318	23 43 30.1	7.887
12	16 19 26.72	2.2390	23 51 20.0	7.776
13	16 21 41.28	2.2462	23 59 3.2	7.663
14	16 23 56.28	2.2534	24 6 39.6	7.548
15	16 26 11.71	2.2606	24 14 9.0	7.433
16	16 28 27.57	2.2679	24 21 31.5	7.316
17	16 30 43.86	2.2752	24 28 47.0	7.199
18	16 33 0.59	2.2824	24 35 55.4	7.080
19	16 35 17.75	2.2896	24 42 56.6	6.959
20	16 37 35.34	2.2968	24 49 50.5	6.836
21	16 39 53.36	2.3040	24 56 36.9	6.712
22	16 42 11.81	2.3112	25 3 15.9	6.587
23	16 44 30.69	2.3183	25 9 47.4	6.460
24	16 46 50.00	2.3254	S.25 16 11.2	6.333

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 46 50.00	2.3254	S.25 16 11.2	6.333
1	16 49 9.73	2.3325	25 22 27.3	6.204
2	16 51 29.89	2.3395	25 28 35.6	6.073
3	16 53 50.47	2.3465	25 34 36.1	5.941
4	16 56 11.47	2.3535	25 40 28.6	5.808
5	16 58 32.89	2.3604	25 46 13.1	5.673
6	17 0 54.72	2.3673	25 51 49.4	5.537
7	17 3 16.97	2.3742	25 57 17.5	5.400
8	17 5 39.63	2.3811	26 2 37.4	5.261
9	17 8 2.70	2.3879	26 7 48.9	5.121
10	17 10 26.17	2.3946	26 12 51.9	4.979
11	17 12 50.05	2.4012	26 17 46.4	4.836
12	17 15 14.32	2.4078	26 22 32.3	4.692
13	17 17 38.98	2.4144	26 27 9.5	4.546
14	17 20 4.04	2.4210	26 31 37.9	4.399
15	17 22 29.50	2.4274	26 35 57.5	4.252
16	17 24 55.34	2.4337	26 40 8.2	4.103
17	17 27 21.55	2.4399	26 44 9.9	3.952
18	17 29 48.12	2.4461	26 48 2.5	3.800
19	17 32 15.07	2.4522	26 51 45.9	3.647
20	17 34 42.39	2.4583	26 55 20.1	3.493
21	17 37 10.08	2.4643	26 58 45.1	3.338
22	17 39 38.12	2.4702	27 2 0.7	3.181
23	17 42 6.51	2.4759	S.27 5 6.8	3.023

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 44 35.23	2.4816	S.27 8 3.4	2.863
1	17 47 4.30	2.4873	27 10 50.4	2.703
2	17 49 33.71	2.4928	27 13 27.8	2.541
3	17 52 3.44	2.4982	27 15 55.4	2.379
4	17 54 33.49	2.5035	27 18 13.2	2.215
5	17 57 3.85	2.5087	27 20 21.2	2.051
6	17 59 34.53	2.5138	27 22 19.3	1.885
7	18 2 5.51	2.5188	27 24 7.4	1.717
8	18 4 36.78	2.5236	27 25 45.4	1.548
9	18 7 8.34	2.5284	27 27 13.2	1.379
10	18 9 40.18	2.5330	27 28 30.9	1.210
11	18 12 12.30	2.5375	27 29 38.4	1.040
12	18 14 44.68	2.5419	27 30 35.7	0.868
13	18 17 17.32	2.5461	27 31 22.6	0.696
14	18 19 50.22	2.5503	27 31 59.1	0.522
15	18 22 23.36	2.5543	27 32 25.1	0.347
16	18 24 56.74	2.5582	27 32 40.7	−0.171
17	18 27 30.34	2.5619	27 32 45.7	+0.005
18	18 30 4.16	2.5655	27 32 40.1	0.181
19	18 32 38.19	2.5690	27 32 23.9	0.358
20	18 35 12.43	2.5723	27 31 57.0	0.536
21	18 37 46.87	2.5755	27 31 19.4	0.715
22	18 40 21.49	2.5785	27 30 31.1	0.895
23	18 2 56.29	2.5814	27 29 31.9	1.075
24	18 45 31.26	2.5841	S.27 28 21.9	1.256

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 13.					SUNDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 45 31.26	2.5841	S.27 28 21.9	1.256	0	20 49 57.56	2.5490	S.22 57 53.2	9.868
1	18 48 6.39	2.5867	27 27 1.1	1.438	1	20 52 30.39	2.5453	22 47 56.2	10.031
2	18 50 41.67	2.5892	27 25 29.4	1.620	2	20 55 2.99	2.5414	22 37 49.4	10.193
3	18 53 17.10	2.5916	27 23 46.7	1.802	3	20 57 35.35	2.5375	22 27 33.0	10.353
4	18 55 52.66	2.5938	27 21 53.1	1.985	4	21 0 7.48	2.5337	22 17 7.1	10.511
5	18 58 28.34	2.5958	27 19 48.5	2.168	5	21 2 39.39	2.5298	22 6 31.7	10.668
6	19 1 4.15	2.5977	27 17 32.9	2.351	6	21 5 11.06	2.5258	21 55 46.9	10.824
7	19 3 40.07	2.5994	27 15 6.3	2.535	7	21 7 42.48	2.5216	21 44 52.8	10.979
8	19 6 16.08	2.6009	27 12 28.7	2.719	8	21 10 13.65	2.5174	21 33 49.5	11.132
9	19 8 52.17	2.6023	27 9 40.0	2.904	9	21 12 44.57	2.5132	21 22 37.0	11.283
10	19 11 28.35	2.6036	27 6 40.3	3.088	10	21 15 15.24	2.5089	21 11 15.6	11.433
11	19 14 4.60	2.6047	27 3 29.5	3.272	11	21 17 45.64	2.5046	20 59 45.2	11.581
12	19 16 40.92	2.6057	27 0 7.6	3.457	12	21 20 15.78	2.5002	20 48 5.9	11.727
13	19 19 17.30	2.6065	26 56 34.6	3.642	13	21 22 45.66	2.4958	20 36 17.8	11.872
14	19 21 53.71	2.6071	26 52 50.5	3.827	14	21 25 15.27	2.4913	20 24 21.1	12.016
15	19 24 30.15	2.6076	26 48 55.3	4.012	15	21 27 44.61	2.4868	20 12 15.8	12.158
16	19 27 6.62	2.6080	26 44 49.0	4.196	16	21 30 13.68	2.4823	20 0 2.0	12.298
17	19 29 43.11	2.6082	26 40 31.6	4.381	17	21 32 42.48	2.4777	19 47 39.9	12.437
18	19 32 19.61	2.6083	26 36 3.2	4.566	18	21 35 11.00	2.4731	19 35 9.5	12.575
19	19 34 56.11	2.6083	26 31 23.7	4.751	19	21 37 39.24	2.4685	19 22 30.9	12.710
20	19 37 32.60	2.6081	26 26 33.1	4.937	20	21 40 7.20	2.4638	19 9 44.3	12.843
21	19 40 9.07	2.6077	26 21 31.3	5.122	21	21 42 34.89	2.4591	18 56 49.7	12.975
22	19 42 45.52	2.6071	26 16 18.5	5.305	22	21 45 2.29	2.4544	18 43 47.3	13.105
23	19 45 21.93	2.6065	S.26 10 54.8	5.488	23	21 47 29.41	2.4496	S.18 30 37.1	13.233
	SATURDAY 14.					MONDAY 16.			
0	19 47 58.30	2.6057	S.26 5 20.1	5.671	0	21 49 56.24	2.4448	S.18 17 19.3	13.360
1	19 50 34.62	2.6048	25 59 34.4	5.855	1	21 52 22.79	2.4401	18 3 53.9	13.484
2	19 53 10.87	2.6036	25 53 37.7	6.038	2	21 54 49.05	2.4354	17 50 21.1	13.606
3	19 55 47.05	2.6024	25 47 29.9	6.219	3	21 57 15.03	2.4307	17 36 41.1	13.727
4	19 58 23.15	2.6010	25 41 11.2	6.400	4	21 59 40.73	2.4259	17 22 53.9	13.846
5	20 0 59.17	2.5996	25 34 41.7	6.581	5	22 2 6.14	2.4211	17 8 59.6	13.964
6	20 3 35.11	2.5981	25 28 1.5	6.762	6	22 4 31.26	2.4163	16 54 58.2	14.080
7	20 6 10.95	2.5963	25 21 10.4	6.942	7	22 6 56.09	2.4116	16 40 50.0	14.193
8	20 8 46.67	2.5943	25 14 8.5	7.121	8	22 9 20.64	2.4069	16 26 35.1	14.303
9	20 11 22.26	2.5923	25 6 55.9	7.299	9	22 11 44.92	2.4022	16 12 13.7	14.411
10	20 13 57.73	2.5903	24 59 32.6	7.477	10	22 14 8.91	2.3974	15 57 45.8	14.519
11	20 16 33.08	2.5881	24 51 58.6	7.654	11	22 16 32.61	2.3926	15 43 11.4	14.626
12	20 19 8.29	2.5857	24 44 14.1	7.830	12	22 18 56.02	2.3878	15 28 30.6	14.730
13	20 21 43.36	2.5831	24 36 19.0	8.006	13	22 21 19.15	2.3832	15 13 43.7	14.831
14	20 24 18.27	2.5804	24 28 13.4	8.180	14	22 23 42.01	2.3787	14 58 50.9	14.929
15	20 26 53.01	2.5777	24 19 57.4	8.354	15	22 26 4.60	2.3741	14 43 52.2	15.026
16	20 29 27.59	2.5749	24 11 31.0	8.526	16	22 28 26.91	2.3695	14 28 47.7	15.122
17	20 32 2.00	2.5721	24 2 54.2	8.698	17	22 30 48.94	2.3649	14 13 37.5	15.217
18	20 34 36.24	2.5691	23 54 7.2	8.868	18	22 33 10.69	2.3603	13 58 21.6	15.309
19	20 37 10.30	2.5659	23 45 10.0	9.038	19	22 35 32.17	2.3558	13 43 0.3	15.398
20	20 39 44.16	2.5626	23 36 2.6	9.206	20	22 37 53.39	2.3514	13 27 33.8	15.485
21	20 42 17.81	2.5593	23 26 45.2	9.373	21	22 40 14.35	2.3471	13 12 2.2	15.570
22	20 44 51.26	2.5559	23 17 17.8	9.539	22	22 42 35.04	2.3427	12 56 25.5	15.655
23	20 47 24.51	2.5525	23 7 40.4	9.704	23	22 44 55.47	2.3383	12 40 43.7	15.737
24	20 49 57.56	2.5490	S.22 57 53.2	9.868	24	22 47 15.63	2.3339	S.12 24 57.1	15.816

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 47 15.63	2.3339	S. 12 24 57.1	15.816
1	22 49 35.53	2.3297	12 9 5.8	15.893
2	22 51 55.19	2.3255	11 53 10.0	15.968
3	22 54 14.60	2.3213	11 37 9.7	16.041
4	22 56 33.76	2.3171	11 21 5.1	16.112
5	22 58 52.66	2.3130	11 4 56.3	16.181
6	23 1 11.32	2.3090	10 48 43.3	16.249
7	23 3 29.74	2.3050	10 32 26.4	16.314
8	23 5 47.93	2.3012	10 16 5.7	16.376
9	23 8 5.89	2.2974	9 59 41.3	16.437
10	23 10 23.62	2.2936	9 43 13.3	16.496
11	23 12 41.12	2.2898	9 26 41.8	16.553
12	23 14 58.39	2.2860	9 10 6.9	16.608
13	23 17 15.44	2.2824	8 53 28.8	16.660
14	23 19 32.28	2.2789	8 36 47.6	16.710
15	23 21 48.92	2.2754	8 20 3.5	16.759
16	23 24 5.35	2.2720	8 3 16.6	16.805
17	23 26 21.57	2.2686	7 46 26.9	16.850
18	23 28 37.59	2.2654	7 29 34.5	16.893
19	23 30 53.42	2.2622	7 12 39.7	16.933
20	23 33 9.06	2.2590	6 55 42.5	16.971
21	23 35 24.51	2.2560	6 38 43.1	17.007
22	23 37 39.78	2.2530	6 21 41.6	17.042
23	23 39 54.87	2.2500	S. 6 4 38.1	17.075

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 42 9.78	2.2471	S. 5 47 32.6	17.106
1	23 44 24.52	2.2443	5 30 25.4	17.134
2	23 46 39.10	2.2416	5 13 16.6	17.160
3	23 48 53.52	2.2390	4 56 6.3	17.184
4	23 51 7.78	2.2364	4 38 54.6	17.207
5	23 53 21.89	2.2339	4 21 41.5	17.228
6	23 55 35.85	2.2314	4 4 27.3	17.246
7	23 57 49.67	2.2290	3 47 12.0	17.262
8	0 0 3.34	2.2267	3 29 55.8	17.276
9	0 2 16.88	2.2246	3 12 38.9	17.288
10	0 4 30.29	2.2225	2 55 21.3	17.299
11	0 6 43.58	2.2205	2 38 3.1	17.309
12	0 8 56.75	2.2185	2 20 44.3	17.316
13	0 11 9.80	2.2166	2 3 25.2	17.320
14	0 13 22.74	2.2148	1 46 5.9	17.322
15	0 15 35.58	2.2131	1 28 46.6	17.322
16	0 17 48.32	2.2115	1 11 27.2	17.322
17	0 20 0.96	2.2098	0 54 7.9	17.320
18	0 22 13.50	2.2083	0 36 48.8	17.316
19	0 24 25.96	2.2069	0 19 30.0	17.309
20	0 26 38.34	2.2056	S. 0 2 11.7	17.299
21	0 28 50.64	2.2044	N. 0 15 5.9	17.288
22	0 31 2.87	2.2032	0 32 22.9	17.277
23	0 33 15.03	2.2022	0 49 39.1	17.264
24	0 35 27.13	2.2012	N. 1 6 54.5	17.249

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 35 27.13	2.2012	N. 1 6 54.5	17.249
1	0 37 39.17	2.2002	1 24 8.9	17.231
2	0 39 51.16	2.1993	1 41 22.1	17.211
3	0 42 3.09	2.1985	1 58 34.1	17.189
4	0 44 14.98	2.1979	2 15 44.8	17.166
5	0 46 26.84	2.1973	2 32 54.0	17.142
6	0 48 38.66	2.1967	2 50 1.7	17.116
7	0 50 50.45	2.1962	3 7 7.8	17.087
8	0 53 2.22	2.1958	3 24 12.1	17.056
9	0 55 13.96	2.1956	3 41 14.5	17.024
10	0 57 25.69	2.1954	3 58 15.0	16.990
11	0 59 37.41	2.1952	4 15 13.4	16.955
12	1 1 49.12	2.1952	4 32 9.6	16.919
13	1 4 0.83	2.1952	4 49 3.6	16.880
14	1 6 12.54	2.1952	5 5 55.2	16.838
15	1 8 24.26	2.1954	5 22 44.2	16.796
16	1 10 35.99	2.1957	5 39 30.7	16.753
17	1 12 47.74	2.1961	5 56 14.6	16.708
18	1 14 59.52	2.1965	6 12 55.7	16.661
19	1 17 11.32	2.1969	6 29 33.9	16.612
20	1 19 23.15	2.1974	6 46 9.1	16.562
21	1 21 35.01	2.1980	7 2 41.3	16.510
22	1 23 46.91	2.1986	7 19 10.3	16.456
23	1 25 58.86	2.1994	N. 7 35 36.0	16.400

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 28 10.85	2.2002	N. 7 51 58.3	16.343
1	1 30 22.89	2.2012	8 8 17.2	16.284
2	1 32 34.99	2.2022	8 24 32.5	16.224
3	1 34 47.16	2.2032	8 40 44.1	16.162
4	1 36 59.39	2.2043	8 56 52.0	16.100
5	1 39 11.68	2.2054	9 12 56.1	16.036
6	1 41 24.04	2.2066	9 28 56.3	15.970
7	1 43 36.48	2.2080	9 44 52.5	15.902
8	1 45 49.00	2.2094	10 0 44.5	15.832
9	1 48 1.61	2.2109	10 16 32.3	15.761
10	1 50 14.31	2.2124	10 32 15.8	15.688
11	1 52 27.10	2.2139	10 47 54.9	15.615
12	1 54 39.98	2.2155	11 3 29.6	15.540
13	1 56 52.96	2.2171	11 18 59.7	15.463
14	1 59 6.05	2.2189	11 34 25.1	15.384
15	2 1 19.24	2.2207	11 49 45.8	15.305
16	2 3 32.54	2.2226	12 5 1.7	15.224
17	2 5 45.96	2.2245	12 20 12.7	15.142
18	2 7 59.49	2.2265	12 35 18.7	15.058
19	2 10 13.14	2.2285	12 50 19.6	14.973
20	2 12 26.92	2.2305	13 5 15.4	14.886
21	2 14 40.82	2.2327	13 20 5.9	14.797
22	2 16 54.85	2.2349	13 34 51.0	14.707
23	2 19 9.02	2.2371	13 49 30.7	14.617
24	2 21 23.32	2.2394	N. 14 4 5.0	14.525

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 21.					MONDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 21 23.32	2.2394	N.14 4 5.0	14.525	0	4 12 3.83	2.3748	N.23 31 36.8	8.706
1	2 23 37.76	2.2418	14 18 33.7	14.431	1	4 14 26.39	2.3774	23 40 14.8	8.561
2	2 25 52.34	2.2442	14 32 56.7	14.335	2	4 16 49.10	2.3799	23 48 44.1	8.416
3	2 28 7.06	2.2466	14 47 13.9	14.239	3	4 19 11.97	2.3824	23 57 4.7	8.270
4	2 30 21.93	2.2490	15 1 25.4	14.142	4	4 21 34.99	2.3849	24 5 16.5	8.122
5	2 32 36.95	2.2515	15 15 31.0	14.043	5	4 23 58.15	2.3872	24 13 19.3	7.974
6	2 34 52.12	2.2541	15 29 30.5	13.942	6	4 26 21.45	2.3895	24 21 13.2	7.825
7	2 37 7.44	2.2567	15 43 24.0	13.841	7	4 28 44.89	2.3918	24 28 58.2	7.676
8	2 39 22.92	2.2593	15 57 11.4	13.739	8	4 31 8.47	2.3940	24 36 34.2	7.526
9	2 41 38.57	2.2619	16 10 52.6	13.635	9	4 33 32.18	2.3962	24 44 1.3	7.376
10	2 43 54.37	2.2646	16 24 27.5	13.529	10	4 35 56.02	2.3984	24 51 19.3	7.225
11	2 46 10.33	2.2673	16 37 56.0	13.422	11	4 38 19.99	2.4005	24 58 28.2	7.073
12	2 48 26.46	2.2701	16 51 18.1	13.314	12	4 40 44.08	2.4025	25 5 28.0	6.921
13	2 50 42.75	2.2729	17 4 33.7	13.206	13	4 43 8.29	2.4044	25 12 18.7	6.768
14	2 52 59.21	2.2757	17 17 42.7	13.096	14	4 45 32.61	2.4063	25 19 0.1	6.614
15	2 55 15.84	2.2785	17 30 45.1	12.984	15	4 47 57.05	2.4081	25 25 32.3	6.460
16	2 57 32.64	2.2814	17 43 40.8	12.871	16	4 50 21.59	2.4099	25 31 55.3	6.306
17	2 59 49.62	2.2843	17 56 29.7	12.756	17	4 52 46.23	2.4115	25 38 9.0	6.152
18	3 2 6.77	2.2872	18 9 11.6	12.641	18	4 55 10.97	2.4131	25 44 13.5	5.997
19	3 4 24.09	2.2902	18 21 46.6	12.525	19	4 57 35.80	2.4146	25 50 8.6	5.841
20	3 6 41.59	2.2931	18 34 14.6	12.409	20	5 0 0.72	2.4161	25 55 54.4	5.685
21	3 8 59.27	2.2960	18 46 35.6	12.291	21	5 2 25.73	2.4175	26 1 30.8	5.529
22	3 11 17.12	2.2990	18 58 49.5	12.172	22	5 4 50.82	2.4188	26 6 57.8	5.372
23	3 13 35.15	2.3020	N.19 10 56.1	12.051	23	5 7 15.98	2.4200	N.26 12 15.4	5.215
	SUNDAY 22.					TUESDAY 24.			
0	3 15 53.36	2.3050	N.19 22 55.4	11.928	0	5 9 41.21	2.4210	N.26 17 23.6	5.058
1	3 18 11.75	2.3080	19 34 47.4	11.805	1	5 12 6.50	2.4220	26 22 22.3	4.900
2	3 20 30.32	2.3110	19 46 32.0	11.681	2	5 14 31.86	2.4230	26 27 11.5	4.742
3	3 22 49.07	2.3140	19 58 9.1	11.556	3	5 16 57.27	2.4239	26 31 51.3	4.584
4	3 25 8.00	2.3170	20 9 38.7	11.430	4	5 19 22.73	2.4247	26 36 21.6	4.426
5	3 27 27.11	2.3201	20 21 0.7	11.302	5	5 21 48.23	2.4253	26 40 42.3	4.267
6	3 29 46.41	2.3232	20 32 15.0	11.173	6	5 24 13.77	2.4259	26 44 53.5	4.108
7	3 32 5.89	2.3261	20 43 21.6	11.044	7	5 26 39.34	2.4264	26 48 55.2	3.948
8	3 34 25.54	2.3290	20 54 20.4	10.915	8	5 29 4.94	2.4268	26 52 47.3	3.789
9	3 36 45.37	2.3320	21 5 11.4	10.784	9	5 31 30.56	2.4271	26 56 29.9	3.630
10	3 39 5.38	2.3350	21 15 54.5	10.652	10	5 33 56.20	2.4273	27 0 2.9	3.470
11	3 41 25.57	2.3381	21 26 29.6	10.518	11	5 36 21.85	2.4273	27 3 26.3	3.311
12	3 43 45.95	2.3411	21 36 56.7	10.384	12	5 38 47.49	2.4273	27 6 40.2	3.152
13	3 46 6.50	2.3440	21 47 15.7	10.250	13	5 41 13.13	2.4273	27 9 44.5	2.992
14	3 48 27.22	2.3469	21 57 26.6	10.114	14	5 43 38.77	2.4272	27 12 39.2	2.833
15	3 50 48.12	2.3498	22 7 29.3	9.977	15	5 46 4.41	2.4270	27 15 24.4	2.673
16	3 53 9.19	2.3527	22 17 23.8	9.839	16	5 48 30.03	2.4266	27 18 0.0	2.513
17	3 55 30.43	2.3556	22 27 10.0	9.700	17	5 50 55.62	2.4261	27 20 26.0	2.353
18	3 57 51.85	2.3584	22 36 47.8	9.560	18	5 53 21.16	2.4255	27 22 42.4	2.193
19	4 0 13.44	2.3612	22 46 17.2	9.420	19	5 55 46.67	2.4249	27 24 49.2	2.034
20	4 2 35.19	2.3640	22 55 38.2	9.280	20	5 58 12.14	2.4242	27 26 46.5	1.875
21	4 4 57.10	2.3667	23 4 50.7	9.139	21	6 0 37.57	2.4233	27 28 34.3	1.716
22	4 7 19.18	2.3694	23 13 54.7	8.996	22	6 3 2.94	2.4223	27 30 12.5	1.557
23	4 9 41.42	2.3721	23 22 50.1	8.851	23	6 5 28.25	2.4213	27 31 41.1	1.398
24	4 12 3.83	2.3748	N.23 31 36.8	8.706	24	6 7 53.49	2.4201	N.27 33 0.2	1.239

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 7 53.49	2.4201	N.27 33 0.2	1.239
1	6 10 18.66	2.4188	27 34 9.8	1.081
2	6 12 43.75	2.4173	27 35 9.9	0.923
3	0 15 8.74	2.4158	27 36 0.6	0.766
4	6 17 33.64	2.4143	27 36 41.8	0.608
5	6 19 58.45	2.4127	27 37 13.5	0.450
6	6 22 23.17	2.4111	27 37 35.8	0.293
7	6 24 47.78	2.4091	27 37 48.7	+0.136
8	6 27 12.26	2.4070	27 37 52.2	−0.020
9	6 29 36.61	2.4048	27 37 46.4	0.175
10	6 32 0.84	2.4026	27 37 31.3	0.330
11	6 34 24.94	2.4004	27 37 6.9	0.485
12	6 36 48.89	2.3980	27 36 33.1	0.640
13	6 39 12.70	2.3956	27 35 50.1	0.794
14	6 41 36.36	2.3930	27 34 57.9	0.948
15	6 43 59.86	2.3904	27 33 56.4	1.101
16	6 46 23.20	2.3876	27 32 45.8	1.253
17	6 48 46.37	2.3848	27 31 26.1	1.404
18	6 51 9.37	2.3818	27 29 57.3	1.556
19	6 53 32.19	2.3788	27 28 19.4	1.707
20	6 55 54.83	2.3756	27 26 32.5	1.857
21	6 58 17.27	2.3724	27 24 36.6	2.007
22	7 0 39.52	2.3692	27 22 31.7	2.156
23	7 3 1.57	2.3658	N.27 20 17.9	2.304

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 5 23.41	2.3623	N.27 17 55.3	2.451
1	7 7 45.04	2.3587	27 15 23.8	2.598
2	7 10 6.46	2.3551	27 12 43.5	2.744
3	7 12 27.65	2.3514	27 9 54.5	2.890
4	7 14 48.62	2.3476	27 6 56.8	3.035
5	7 17 9.36	2.3438	27 3 50.4	3.180
6	7 19 29.87	2.3398	27 0 35.3	3.323
7	7 21 50.14	2.3358	26 57 11.6	3.465
8	7 24 10.16	2.3317	26 53 39.5	3.606
9	7 26 29.93	2.3275	26 49 58.9	3.747
10	7 28 49.45	2.3233	26 46 9.9	3.887
11	7 31 8.72	2.3191	26 42 12.5	4.027
12	7 33 27.73	2.3147	26 38 6.7	4.165
13	7 35 46.48	2.3102	26 33 52.7	4.303
14	7 38 4.96	2.3056	26 29 30.5	4.440
15	7 40 23.15	2.3010	26 25 0.0	4.576
16	7 42 41.07	2.2965	26 20 21.4	4.710
17	7 44 58.72	2.2919	26 15 34.8	4.844
18	7 47 16.10	2.2872	26 10 40.2	4.977
19	7 49 33.19	2.2823	26 5 37.6	5.109
20	7 51 49.98	2.2774	26 0 27.2	5.240
21	7 54 6.48	2.2725	25 55 8.9	5.370
22	7 56 22.69	2.2676	25 49 42.8	5.499
23	7 58 38.60	2.2627	25 44 9.0	5.627
24	8 0 54.21	2.2577	N.25 38 27.5	5.755

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 0 54.21	2.2577	N.25 38 27.5	5.755
1	8 3 9.52	2.2526	25 32 38.4	5.881
2	8 5 24.52	2.2475	25 26 41.8	6.007
3	8 7 39.21	2.2423	25 20 37.6	6.131
4	8 9 53.60	2.2371	25 14 26.0	6.254
5	8 12 7.67	2.2319	25 8 7.1	6.376
6	8 14 21.43	2.2267	25 1 40.9	6.498
7	8 16 34.87	2.2215	24 55 7.4	6.618
8	8 18 48.00	2.2162	24 48 26.7	6.737
9	8 21 0.81	2.2108	24 41 38.9	6.855
10	8 23 13.30	2.2054	24 34 44.1	6.973
11	8 25 25.47	2.2000	24 27 42.3	7.090
12	8 27 37.30	2.1946	24 20 33.4	7.206
13	8 29 48.81	2.1892	24 13 17.6	7.319
14	8 32 0.00	2.1838	24 5 55.1	7.431
15	8 34 10.87	2.1783	23 58 26.0	7.542
16	8 36 21.41	2.1728	23 50 50.1	7.653
17	8 38 31.61	2.1673	23 43 7.6	7.764
18	8 40 41.48	2.1618	23 35 18.4	7.873
19	8 42 51.02	2.1563	23 27 22.7	7.980
20	8 45 0.23	2.1509	23 19 20.7	8.086
21	8 47 9.12	2.1454	23 11 12.4	8.192
22	8 49 17.68	2.1398	23 2 57.7	8.297
23	8 51 25.90	2.1342	N.22 54 36.8	8.401

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 53 33.78	2.1286	N.22 46 9.6	8.504
1	8 55 41.33	2.1231	22 37 36.3	8.605
2	8 57 48.55	2.1177	22 28 57.1	8.704
3	8 59 55.45	2.1122	22 20 11.9	8.803
4	9 2 2.02	2.1067	22 11 20.7	8.901
5	9 4 8.25	2.1011	22 2 23.7	8.998
6	9 6 14.15	2.0956	21 53 21.0	9.094
7	9 8 19.72	2.0901	21 44 12.5	9.189
8	9 10 24.96	2.0847	21 34 58.3	9.282
9	9 12 29.88	2.0792	21 25 38.6	9.374
10	9 14 34.47	2.0737	21 16 13.4	9.466
11	9 16 38.73	2.0683	21 6 42.7	9.558
12	9 18 42.67	2.0629	20 57 6.5	9.648
13	9 20 46.28	2.0575	20 47 25.0	9.736
14	9 22 49.57	2.0521	20 37 38.3	9.822
15	9 24 52.54	2.0468	20 27 46.4	9.908
16	9 26 55.19	2.0414	20 17 49.4	9.993
17	9 28 57.52	2.0360	20 7 47.3	10.078
18	9 30 59.52	2.0306	19 57 40.1	10.161
19	9 33 1.20	2.0254	19 47 28.0	10.242
20	9 35 2.58	2.0203	19 37 11.0	10.322
21	9 37 3.65	2.0151	19 26 49.3	10.402
22	9 39 4.40	2.0099	19 16 22.8	10.481
23	9 41 4.84	2.0047	19 5 51.6	10.559
24	9 43 4.97	1.9996	N.18 55 15.8	10.635

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, ...	9	4	28.9
● New Moon, ...	16	7	15.2
☽ First Quarter, ...	22	22	45.6

	d	h
☾ Apogee, ...	5	9.0
☾ Perigee, ...	17	12.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Arietis	W.	95° 49′ 7″	2961	97° 20′ 9″	2969	98° 51′ 1″	2977	100° 21′ 43″	2985
	Aldebaran	W.	65 25 55	2938	66 57 26	2944	68 28 49	2950	70 0 4	2958
	Pollux	W.	21 11 14	2907	22 43 24	2912	24 15 27	2919	25 47 22	2925
	Jupiter	E.	48 41 38	2874	47 8 46	2882	45 36 4	2890	44 3 32	2898
	Spica	E.	69 39 23	2899	68 7 3	2907	66 34 53	2915	65 2 53	2923
	Antares	E.	115 32 14	2893	113 59 46	2901	112 27 28	2909	110 55 20	2916
2	Aldebaran	W.	77 34 8	2992	79 4 31	2998	80 34 46	3005	82 4 53	3012
	Pollux	W.	33 24 57	2957	34 56 4	2964	36 27 2	2970	37 57 52	2977
	Jupiter	E.	36 23 20	2935	34 51 46	2942	33 20 21	2950	31 49 5	2958
	Spica	E.	57 25 21	2962	55 54 20	2969	54 23 28	2977	52 52 46	2984
	Antares	E.	103 17 1	2953	101 45 49	2960	100 14 46	2966	98 43 51	2973
3	Aldebaran	W.	89 33 25	3043	91 2 44	3049	92 31 56	3056	94 1 0	3061
	Pollux	W.	45 30 4	3007	47 0 8	3013	48 30 5	3019	49 59 54	3024
	Jupiter	E.	24 15 3	2993	22 44 42	3001	21 14 30	3008	19 44 27	3016
	Spica	E.	45 21 31	3019	43 51 42	3026	42 22 2	3034	40 52 31	3040
	Antares	E.	91 11 24	3005	89 41 18	3012	88 11 20	3018	86 41 29	3023
4	Aldebaran	W.	101 24 38	3088	102 53 2	3092	104 21 21	3097	105 49 34	3101
	Pollux	W.	57 27 26	3048	58 56 39	3052	60 25 47	3056	61 54 50	3060
	Regulus	W.	21 18 49	3132	22 46 20	3127	24 13 57	3123	25 41 39	3120
	Spica	E.	33 26 58	3073	31 58 16	3080	30 29 42	3087	29 1 16	3094
	Antares	E.	79 13 54	3048	77 44 41	3052	76 15 33	3056	74 46 30	3060
	α Aquilæ	E.	122 25 10	4301	121 18 18	4265	120 10 53	4233	119 2 58	4202
	Sun	E.	146 13 32	3485	144 52 51	3486	143 32 11	3488	142 11 33	3489
5	Aldebaran	W.	113 9 24	3120	114 37 9	3124	116 4 50	3127	117 32 27	3129
	Pollux	W.	69 19 5	3073	70 47 47	3076	72 16 26	3078	73 45 3	3078
	Regulus	W.	33 0 53	3111	34 28 49	3110	35 56 46	3109	37 24 45	3108
	Antares	E.	67 22 18	3075	65 53 38	3077	64 25 0	3078	62 56 24	3080
	α Aquilæ	E.	113 16 55	4083	112 6 37	4064	110 56 0	4046	109 45 6	4029
	Sun	E.	135 28 45	3495	134 8 15	3495	132 47 45	3496	131 27 16	3496
6	Pollux	W.	81 7 57	3079	82 36 32	3078	84 5 8	3077	85 33 46	3074
	Regulus	W.	44 44 59	3101	46 13 8	3099	47 41 19	3096	49 9 33	3093
	Antares	E.	55 33 41	3082	54 5 9	3080	52 36 35	3078	51 7 59	3078
	α Aquilæ	E.	103 46 48	3960	102 34 29	3950	101 22 0	3939	100 9 20	3929
	Sun	E.	124 44 45	3492	123 24 12	3489	122 3 36	3488	120 42 58	3484
7	Pollux	W.	92 57 42	3059	94 26 42	3055	95 55 47	3050	97 24 58	3044
	Regulus	W.	56 31 44	3074	58 0 25	3069	59 29 12	3064	60 58 6	3058
	Jupiter	W.	23 35 59	3042	25 5 20	3036	26 34 48	3030	28 4 23	3025
	Antares	E.	43 44 23	3063	42 15 28	3060	40 46 29	3055	39 17 24	3049
	α Aquilæ	E.	94 3 44	3890	92 50 14	3883	91 36 37	3877	90 22 54	3871
	Sun	E.	113 58 51	3464	112 37 47	3460	111 16 38	3454	109 55 22	3448
8	Pollux	W.	104 52 43	3011	106 22 42	3003	107 52 51	2994	109 23 11	2986
	Regulus	W.	68 24 32	3023	69 54 16	3014	71 24 11	3005	72 54 17	2997
	Jupiter	W.	35 34 21	2988	37 4 49	2980	38 35 27	2971	40 6 16	2961
	Spica	W.	14 35 3	3128	16 2 39	3101	17 30 47	3078	18 59 23	3057
	Antares	E.	31 50 18	3020	30 20 30	3013	28 50 33	3005	27 20 27	2997
	α Aquilæ	E.	84 13 3	3852	82 58 54	3848	81 44 41	3846	80 30 26	3845
	Sun	E.	103 7 10	3410	101 45 5	3400	100 22 49	3392	99 0 23	3381

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Arietis	W.	101° 52′ 14″	2993	103° 22′ 35″	3002	104° 52′ 45″	3010	106° 22′ 45″	3019
	Aldebaran	W.	71 31 10	2965	73 2 7	2971	74 32 56	2978	76 3 36	2985
	Pollux	W.	27 19 9	2931	28 50 48	2938	30 22 19	2944	31 53 42	2950
	Jupiter	E.	42 31 10	2905	40 58 58	2913	39 26 56	2920	37 55 3	2928
	Spica	E.	63 31 3	2931	61 59 23	2939	60 27 53	2946	58 56 32	2954
	Antares	E.	109 23 21	2924	107 51 32	2931	106 19 52	2939	104 48 22	2946
2	Aldebaran	W.	83 34 51	3018	85 4 41	3025	86 34 23	3030	88 3 58	3037
	Pollux	W.	39 28 34	2983	40 59 8	2989	42 29 34	2995	43 59 53	3001
	Jupiter	E.	30 17 59	2965	28 47 2	2971	27 16 13	2978	25 45 33	2986
	Spica	E.	51 22 13	2991	49 51 49	2998	48 21 34	3005	46 51 28	3013
	Antares	E.	97 13 5	2980	95 42 27	2987	94 11 58	2993	92 41 37	3000
3	Aldebaran	W.	95 29 57	3067	96 58 47	3072	98 27 31	3078	99 56 8	3083
	Pollux	W.	51 29 37	3030	52 59 13	3034	54 28 43	3039	55 58 7	3043
	Jupiter	E.	18 14 34	3024	16 44 51	3033	15 15 19	3043	13 45 59	3054
	Spica	E.	39 23 8	3047	37 53 54	3053	36 24 47	3060	34 55 48	3067
	Antares	E.	85 11 45	3029	83 42 8	3034	82 12 37	3039	80 43 13	3043
4	Aldebaran	W.	107 17 42	3106	108 45 44	3110	110 13 42	3114	111 41 35	3117
	Pollux	W.	63 23 49	3064	64 52 43	3066	66 21 34	3069	67 50 21	3072
	Regulus	W.	27 9 24	3118	28 37 12	3114	30 5 4	3113	31 32 58	3112
	Spica	E.	27 32 59	3101	26 4 51	3109	24 36 52	3117	23 9 3	3127
	Antares	E.	73 17 32	3064	71 48 38	3067	70 19 48	3069	68 51 1	3073
	α Aquilæ	E.	117 54 34	4175	116 45 44	4150	115 36 30	4126	114 26 53	4104
	Sun	E.	140 50 57	3490	139 30 22	3491	138 9 48	3493	136 49 16	3494
5	Aldebaran	W.	119 0 1	3132	120 27 32	3134	121 55 0	3136	123 22 26	3137
	Pollux	W.	75 13 39	3079	76 42 14	3080	78 10 48	3080	79 39 22	3079
	Regulus	W.	38 52 45	3107	40 20 46	3106	41 48 48	3105	43 16 52	3102
	Antares	E.	61 27 50	3081	59 59 17	3082	58 30 45	3082	57 2 13	3082
	α Aquilæ	E.	108 33 55	4014	107 22 29	4000	106 10 49	3985	104 58 55	3972
	Sun	E.	130 6 47	3496	128 46 18	3495	127 25 48	3494	126 5 17	3493
6	Pollux	W.	87 2 27	3072	88 31 11	3070	89 59 57	3067	91 28 47	3063
	Regulus	W.	50 37 51	3090	52 6 13	3087	53 34 39	3083	55 3 9	3079
	Antares	E.	49 39 22	3075	48 10 42	3073	46 41 59	3070	45 13 13	3067
	α Aquilæ	E.	98 56 30	3920	97 43 31	3912	96 30 23	3904	95 17 7	3897
	Sun	E.	119 22 16	3481	118 1 31	3478	116 40 42	3474	115 19 49	3470
7	Pollux	W.	98 54 16	3039	100 23 41	3033	101 53 13	3026	103 22 53	3018
	Regulus	W.	62 27 7	3052	63 56 16	3045	65 25 33	3039	66 54 58	3031
	Jupiter	W.	29 34 5	3018	31 3 56	3011	32 33 55	3004	34 4 3	2996
	Antares	E.	37 48 12	3044	36 18 54	3039	34 49 30	3033	33 19 58	3026
	α Aquilæ	E.	89 9 5	3866	87 55 11	3861	86 41 12	3857	85 27 9	3855
	Sun	E.	108 34 0	3441	107 12 30	3434	105 50 52	3426	104 29 5	3419
8	Pollux	W.	110 53 41	2977	112 24 23	2966	113 55 18	2956	115 26 26	2946
	Regulus	W.	74 24 34	2987	75 55 3	2977	77 25 45	2966	78 56 40	2956
	Jupiter	W.	41 37 18	2951	43 8 32	2942	44 39 58	2931	46 11 38	2920
	Spica	W.	20 28 25	3038	21 57 51	3020	23 27 39	3003	24 57 48	2986
	Antares	E.	25 50 11	2990	24 19 46	2982	22 49 11	2974	21 18 26	2966
	α Aquilæ	E.	79 16 10	3844	78 1 53	3845	76 47 37	3845	75 33 21	3847
	Sun	E.	97 37 45	3371	96 14 55	3359	94 51 52	3349	93 28 37	3338

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9	Pollux	W.	116° 57′ 47″	2935	118° 29′ 22″	2923	120° 1′ 12″	2911	121° 33′ 17″	2898
	Regulus	W.	80 27 48	2944	81 59 11	2932	83 30 49	2920	85 2 42	2908
	Jupiter	W.	47 43 32	2908	49 15 41	2897	50 48 4	2884	52 20 43	2872
	Spica	W.	26 28 18	2971	27 59 7	2955	29 30 16	2940	31 1 44	2925
	α Aquilæ	E.	74 19 7	3850	73 4 56	3853	71 50 48	3857	70 36 45	3862
	Sun	E.	92 5 9	3325	90 41 26	3312	89 17 28	3298	87 53 14	3285
10	Regulus	W.	92 46 18	2839	94 19 55	2824	95 53 52	2809	97 28 8	2793
	Jupiter	W.	60 8 14	2802	61 42 39	2787	63 17 24	2772	64 52 29	2756
	Spica	W.	38 43 56	2847	40 17 23	2831	41 51 11	2815	43 25 20	2798
	α Aquilæ	E.	64 28 24	3914	63 15 18	3929	62 2 28	3948	60 49 57	3968
	Sun	E.	80 47 58	3210	79 22 1	3194	77 55 45	3178	76 29 9	3161
11	Regulus	W.	105 24 42	2711	107 1 7	2695	108 37 54	2677	110 15 5	2660
	Jupiter	W.	72 53 11	2673	74 30 27	2656	76 8 6	2638	77 46 9	2621
	Spica	W.	51 21 39	2711	52 58 4	2693	54 34 53	2675	56 12 6	2657
	α Aquilæ	E.	54 53 30	4122	53 43 50	4167	52 34 53	4217	51 26 43	4273
	Sun	E.	69 10 58	3072	67 42 14	3054	66 13 8	3035	64 43 39	3016
12	Regulus	W.	118 26 57	2570	120 6 33	2552	121 46 34	2535	123 26 59	2516
	Jupiter	W.	86 2 34	2529	87 43 7	2511	89 24 5	2492	91 5 30	2473
	Spica	W.	64 24 24	2564	66 4 8	2545	67 44 19	2526	69 24 56	2507
	Antares	W.	18 31 58	2580	20 11 20	2559	21 51 12	2537	23 31 34	2515
	α Aquilæ	E.	46 0 57	4677	44 59 38	4791	43 59 54	4920	43 1 55	5067
	Sun	E.	57 10 16	2920	55 38 22	2901	54 6 4	2881	52 33 21	2862
13	Jupiter	W.	99 39 10	2380	101 23 13	2362	103 7 43	2344	104 52 39	2325
	Spica	W.	77 54 37	2413	79 37 53	2395	81 21 35	2377	83 5 43	2358
	Antares	W.	32 0 40	2415	33 43 54	2396	35 27 35	2376	37 11 44	2358
	Sun	E.	44 43 37	2768	43 8 27	2750	41 32 53	2732	39 56 56	2716
14	Jupiter	W.	113 43 49	2239	115 31 18	2223	117 19 11	2207	119 7 28	2192
	Spica	W.	91 52 52	2272	93 39 33	2256	95 26 38	2239	97 14 7	2225
	Antares	W.	45 59 2	2270	47 45 46	2252	49 32 56	2236	51 20 30	2220
	Sun	E.	31 51 50	2640	30 13 49	2627	28 35 31	2616	26 56 58	2610
18	Sun	W.	24 8 21	2410	25 51 41	2406	27 35 7	2404	29 18 36	2403
	Aldebaran	E.	74 10 25	2072	72 18 43	2077	70 27 8	2083	68 35 42	2090
	Pollux	E.	118 4 35	2028	116 11 45	2033	114 19 2	2037	112 26 26	2042
19	Sun	W.	37 55 42	2418	39 38 51	2425	41 21 50	2433	43 4 38	2441
	Aldebaran	E.	59 21 27	2134	57 31 19	2145	55 41 28	2157	53 51 56	2170
	Pollux	E.	103 5 45	2077	101 14 10	2086	99 22 49	2096	97 31 43	2105
20	Sun	W.	51 35 21	2493	53 16 44	2505	54 57 50	2518	56 38 38	2531
	Mars	W.	14 51 20	2430	16 34 12	2436	18 16 55	2445	19 59 26	2454
	Aldebaran	E.	44 49 31	2247	43 2 14	2266	41 15 25	2286	39 29 5	2307
	Pollux	E.	88 20 10	2161	86 30 43	2173	84 41 35	2186	82 52 46	2198
	Regulus	E.	124 46 38	2176	122 57 35	2188	121 8 49	2200	119 20 21	2212
21	Sun	W.	64 57 58	2601	66 36 51	2616	68 15 24	2631	69 53 37	2646
	Mars	W.	28 28 23	2513	30 9 18	2527	31 49 54	2541	33 30 10	2556
	Aldebaran	E.	30 45 56	2441	29 3 20	2477	27 21 34	2516	25 40 43	2561
	Pollux	E.	73 53 38	2267	72 6 50	2281	70 20 23	2296	68 34 18	2311

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Pollux	W.	123° 5′ 38″	2886	124° 38′ 15″	2873	126° 11′ 9″	2859	127° 44′ 21″	2845
	Regulus	W.	86 34 51	2894	88 7 17	2881	89 40 0	2868	91 13 0	2854
	Jupiter	W.	53 53 38	2859	55 26 50	2845	57 0 20	2831	58 34 8	2817
	Spica	W.	32 33 31	2909	34 5 38	2894	35 38 4	2879	37 10 50	2863
	α Aquilæ	E.	69 22 47	3870	68 8 57	3878	66 55 15	3889	65 41 44	3900
	Sun	E.	86 28 45	3270	85 3 59	3257	83 38 57	3242	82 13 37	3225
10	Regulus	W.	99 2 45	2778	100 37 42	2762	102 13 0	2745	103 48 40	2729
	Jupiter	W.	66 27 54	2741	68 3 40	2724	69 39 48	2707	71 16 18	2690
	Spica	W.	44 59 51	2781	46 34 44	2764	48 9 59	2747	49 45 37	2729
	α Aquilæ	E.	59 37 46	3992	58 25 59	4019	57 14 38	4049	56 3 47	4084
	Sun	E.	75 2 13	3143	73 34 56	3126	72 7 18	3109	70 39 19	3091
11	Regulus	W.	111 52 39	2642	113 30 37	2624	115 8 59	2606	116 47 46	2588
	Jupiter	W.	79 24 36	2602	81 3 28	2584	82 42 45	2566	84 22 27	2548
	Spica	W.	57 49 43	2639	59 27 45	2620	61 6 13	2601	62 45 6	2583
	α Aquilæ	E.	50·19 25	4334	49 13 4	4406	48 7 48	4485	47 3 43	4575
	Sun	E.	63 13 46	2997	61 43 30	2978	60 12 50	2958	58 41 45	2939
12	Regulus	W.	125 7 50	2498	126 49 6	2480	128 30 47	2462	130 12 53	2445
	Jupiter	W.	92 47 21	2454	94 29 39	2436	96 12 23	2417	97 55 33	2398
	Spica	W.	71 5 59	2488	72 47 29	2470	74 29 25	2450	76 11 48	2432
	Antares	W.	25 12 26	2494	26 53 47	2475	28 35 36	2454	30 17 54	2434
	α Aquilæ	E.	42 5 52	5233	41 11 55	5421	40 20 15	5635	39 31 4	5883
	Sun	E.	51 0 13	2843	49 26 41	2824	47 52 44	2805	46 18 23	2786
13	Jupiter	W.	106 38 2	2307	108 23 51	2290	110 10 5	2272	111 56 45	2256
	Spica	W.	84 50 18	2340	86 35 19	2323	88 20 45	2306	90 6 36	2289
	Antares	W.	38 56 19	2339	40 41 21	2322	42 26 49	2304	44 12 43	2287
	Sun	E.	38 20 37	2700	36 43 57	2684	35 6 55	2668	33 29 32	2654
14	Jupiter	W.	120 56 8	2176	122 45 11	2162	124 34 36	2148	126 24 22	2134
	Spica	W.	99 1 58	2209	100 50 12	2194	102 38 48	2180	104 27 45	2167
	Antares	W.	53 8 27	2205	54 56 47	2190	56 45 29	2176	58 34 33	2163
	Sun	E.	25 18 16	2607	23 39 30	2605	22 0 42	2604	20 21 53	2608
18	Sun	W.	31 2 7	2403	32 45 37	2405	34 29 4	2409	36 12 26	2413
	Aldebaran	E.	66 44 27	2097	64 53 23	2104	63 2 30	2113	61 11 51	2123
	Pollux	E.	110 33 58	2048	108 41 39	2055	106 49 30	2062	104 57 32	2069
19	Sun	W.	44 47 15	2450	46 29 39	2460	48 11 48	2471	49 53 42	2482
	Aldebaran	E.	52 2 43	2184	50 13 51	2198	48 25 21	2214	46 37 14	2230
	Pollux	E.	95 40 52	2115	93 50 16	2126	91 59 57	2137	90 9 55	2149
20	Sun	W.	58 19 8	2544	59 59 20	2559	61 39 12	2572	63 18 45	2587
	Mars	W.	21 41 44	2464	23 23 48	2475	25 5 37	2487	26 47 9	2499
	Aldebaran	E.	37 43 16	2330	35 58 0	2354	34 13 19	2381	32 29 17	2410
	Pollux	E.	81 4 16	2212	79 16 6	2225	77 28 16	2239	75 40 47	2253
	Regulus	E.	117 32 12	2225	115 44 22	2238	113 56 51	2251	112 9 40	2264
21	Sun	W.	71 31 29	2662	73 9 0	2678	74 46 10	2693	76 22 59	2709
	Mars	W.	35 10 6	2570	36 49 42	2585	38 28 58	2600	40 7 53	2615
	Aldebaran	E.	24 0 54	2613	22 22 17	2675	20 45 4	2749	19 9 29	2838
	Pollux	E.	66 48 34	2326	65 3 12	2340	63 18 11	2355	61 33 32	2370

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21	Regulus	E.	110° 22′ 48″	2279	108° 36′ 17″	2293	106° 50′ 7″	2307	105° 4′ 18″	2321
22	Sun	W.	77 59 27	2725	79 35 34	2741	81 11 20	2756	82 46 45	2772
	Mars	W.	41 46 28	2630	43 24 42	2646	45 2 35	2660	46 40 8	2676
	α Arietis	W.	18 0 36	3153	19 27 42	3047	20 56 57	2967	22 27 51	2906
	Pollux	E.	59 49 14	2385	58 5 18	2400	56 21 43	2415	54 38 30	2430
	Regulus	E.	96 20 27	2394	94 36 44	2410	92 53 23	2424	91 10 23	2439
	Jupiter	E.	127 53 10	2351	126 8 25	2366	124 24 2	2381	122 40 0	2396
23	Sun	W.	90 38 43	2850	92 12 6	2866	93 45 9	2881	95 17 52	2896
	Mars	W.	54 42 46	2751	56 18 18	2766	57 53 30	2781	59 28 23	2796
	α Arietis	W.	30 16 27	2766	31 51 39	2757	33 27 3	2750	35 2 36	2746
	Pollux	E.	46 7 40	2504	44 26 32	2518	42 45 44	2533	41 5 16	2547
	Regulus	E.	82 40 34	2512	80 59 37	2527	79 19 1	2541	77 38 45	2555
	Jupiter	E.	114 4 59	2467	112 23 0	2482	110 41 21	2495	109 0 1	2509
24	Sun	W.	102 56 45	2969	104 27 36	2983	105 58 10	2997	107 28 26	3011
	Mars	W.	67 18 2	2867	68 51 3	2881	70 23 46	2894	71 56 12	2907
	α Arietis	W.	43 0 47	2753	44 36 16	2759	46 11 38	2764	47 46 53	2770
	Pollux	E.	32 47 51	2618	31 9 20	2631	29 31 7	2644	27 53 12	2658
	Regulus	E.	69 22 11	2624	67 43 48	2638	66 5 44	2650	64 27 57	2663
	Jupiter	E.	100 38 4	2575	98 58 35	2588	97 19 24	2601	95 40 30	2612
	Spica	E.	123 25 11	2621	121 46 44	2633	120 8 34	2646	118 30 41	2657
25	Sun	W.	114 55 36	3077	116 24 14	3089	117 52 37	3102	119 20 44	3114
	Mars	W.	79 34 19	2970	81 5 9	2981	82 35 45	2993	84 6 6	3005
	α Arietis	W.	55 40 59	2806	57 15 19	2814	58 49 29	2821	60 23 29	2829
	Aldebaran	W.	25 33 35	2931	27 5 14	2921	28 37 6	2913	30 9 8	2907
	Regulus	E.	56 23 20	2725	54 47 14	2738	53 11 24	2750	51 35 50	2761
	Jupiter	E.	87 30 5	2672	85 52 47	2684	84 15 45	2694	82 38 57	2704
	Spica	E.	110 25 17	2716	108 48 59	2727	107 12 55	2738	105 37 6	2749
26	Sun	W.	126 37 46	3172	128 4 29	3183	129 30 59	3193	130 57 16	3204
	Mars	W.	91 34 23	3060	93 3 22	3069	94 32 9	3078	96 0 45	3087
	α Arietis	W.	68 10 53	2869	69 43 51	2877	71 16 39	2886	72 49 16	2894
	Aldebaran	W.	37 50 25	2903	39 22 40	2905	40 54 52	2908	42 27 1	2912
	Regulus	E.	43 41 47	2818	42 7 43	2829	40 33 53	2841	39 0 18	2852
	Jupiter	E.	74 38 25	2755	73 2 58	2765	71 27 44	2774	69 52 42	2782
	Spica	E.	97 41 28	2800	96 7 0	2809	94 32 44	2818	92 58 40	2828
27	Sun	W.	138 5 31	3257	139 30 33	3267	140 55 23	3276	142 20 2	3287
	Mars	W.	103 20 53	3134	104 48 21	3143	106 15 39	3150	107 42 48	3158
	α Arietis	W.	80 29 54	2931	82 1 33	2939	83 33 2	2946	85 4 22	2954
	Aldebaran	W.	50 6 28	2934	51 38 4	2939	53 9 33	2944	54 40 56	2949
	Regulus	E.	31 16 1	2911	29 43 56	2923	28 12 6	2936	26 40 33	2950
	Jupiter	E.	62 0 21	2825	60 26 25	2833	58 52 40	2841	57 19 5	2848
	Spica	E.	85 11 12	2870	83 38 15	2878	82 5 28	2886	80 32 51	2894
28	Mars	W.	114 56 12	3196	116 22 26	3203	117 48 32	3209	119 14 30	3216
	α Arietis	W.	92 38 47	2989	94 9 14	2996	95 39 32	3002	97 9 42	3009
	Aldebaran	W.	62 16 14	2975	63 46 58	2981	65 17 35	2985	66 48 6	2991
	Pollux	W.	17 59 4	2942	19 30 29	2946	21 1 50	2950	22 33 6	2954
	Jupiter	E.	49 33 30	2883	48 0 50	2890	46 28 18	2896	44 55 54	2903
	Spica	E.	72 52 10	2930	71 20 29	2936	69 48 56	2942	68 17 31	2950
	Antares	E.	118 45 10	2924	117 13 22	2931	115 41 43	2938	114 10 12	2943

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21	Regulus	E.	103° 18′ 49″	2336	101° 33′ 42″	2350	99° 48′ 56″	2365	98° 4′ 31″	2380
22	Sun	W.	84 21 50	2788	85 56 34	2804	87 30 57	2819	89 5 0	2835
	Mars	W.	48 17 20	2691	49 54 12	2707	51 30 43	2722	53 6 54	2736
	α Arietis	W.	24 0 2	2860	25 33 12	2826	27 7 6	2800	28 41 34	2781
	Pollux	E.	52 55 38	2445	51 13 7	2460	49 30 57	2475	47 49 8	2489
	Regulus	E.	89 27 44	2454	87 45 26	2468	86 3 28	2483	84 21 51	2497
	Jupiter	E.	120 56 19	2410	119 12 58	2424	117 29 58	2438	115 47 18	2453
23	Sun	W.	96 50 16	2911	98 22 21	2925	99 54 8	2940	101 25 36	2955
	Mars	W.	61 2 56	2811	62 37 10	2825	64 11 6	2839	65 44 43	2853
	α Arietis	W.	36 38 15	2744	38 13 56	2745	39 49 36	2747	41 25 13	2750
	Pollux	E.	39 25 8	2561	37 45 20	2575	36 5 51	2589	34 26 41	2604
	Regulus	E.	75 58 48	2569	74 19 10	2583	72 39 52	2596	71 0 52	2610
	Jupiter	E.	107 19 0	2522	105 38 18	2536	103 57 55	2550	102 17 51	2562
24	Sun	W.	108 58 25	3025	110 28 7	3038	111 57 33	3052	113 26 42	3064
	Mars	W.	73 28 22	2920	75 0 15	2933	76 31 52	2946	78 3 13	2958
	α Arietis	W.	49 22 0	2776	50 56 59	2783	52 31 49	2791	54 6 29	2798
	Pollux	E.	26 15 36	2672	24 38 18	2686	23 1 19	2699	21 24 38	2713
	Regulus	E.	62 50 28	2676	61 13 16	2689	59 36 21	2701	57 59 42	2713
	Jupiter	E.	94 1 52	2625	92 23 31	2638	90 45 27	2649	89 7 38	2660
	Spica	E.	116 53 4	2669	115 15 43	2682	113 38 39	2693	112 1 50	2705
25	Sun	W.	120 48 37	3125	122 16 16	3138	123 43 40	3149	125 10 50	3161
	Mars	W.	85 36 13	3016	87 6 6	3027	88 35 45	3038	90 5 11	3049
	α Arietis	W.	61 57 19	2838	63 30 58	2845	65 4 27	2854	66 37 45	2862
	Aldebaran	W.	31 41 18	2903	33 13 33	2901	34 45 50	2901	36 18 8	2901
	Regulus	E.	50 0 31	2772	48 25 27	2785	46 50 39	2796	45 16 6	2807
	Jupiter	E.	81 2 23	2715	79 26 3	2725	77 49 57	2735	76 14 4	2746
	Spica	E.	104 1 31	2760	102 26 10	2770	100 51 3	2780	99 16 9	2790
26	Sun	W.	132 23 20	3215	133 49 11	3225	135 14 50	3236	136 40 17	3247
	Mars	W.	97 29 10	3097	98 57 23	3107	100 25 24	3116	101 53 14	3125
	α Arietis	W.	74 21 43	2901	75 54 0	2909	77 26 8	2916	78 58 6	2924
	Aldebaran	W.	43 59 5	2916	45 31 4	2920	47 2 58	2924	48 34 46	2929
	Regulus	E.	37 26 57	2863	35 53 51	2874	34 20 59	2886	32 48 22	2898
	Jupiter	E.	68 17 51	2792	66 43 12	2800	65 8 44	2808	63 34 27	2817
	Spica	E.	91 24 48	2836	89 51 7	2845	88 17 38	2854	86 44 20	2862
27	Sun	W.	143 44 29	3297	145 8 44	3308	146 32 46	3319	147 56 36	3327
	Mars	W.	109 9 48	3166	110 36 38	3174	112 3 18	3182	113 29 49	3188
	α Arietis	W.	86 35 33	2961	88 6 35	2968	89 37 28	2975	91 8 12	2982
	Aldebaran	W.	56 12 13	2954	57 43 23	2959	59 14 27	2965	60 45 24	2970
	Regulus	E.	25 9 18	2965	23 38 22	2982	22 7 47	3001	20 37 35	3022
	Jupiter	E.	55 45 39	2855	54 12 23	2862	52 39 16	2870	51 6 19	2876
	Spica	E.	79 0 24	2901	77 28 7	2909	75 55 59	2916	74 24 0	2923
28	Mars	W.	120 40 20	3223	122 6 2	3229	123 31 37	3236	124 57 4	3242
	α Arietis	W.	98 39 44	3015	100 9 38	3022	101 39 23	3029	103 9 0	3035
	Aldebaran	W.	68 18 30	2996	69 48 48	3001	71 19 0	3005	72 49 6	3011
	Pollux	W.	24 4 16	2959	25 35 20	2963	27 6 19	2968	28 37 12	2973
	Jupiter	E.	43 23 39	2909	41 51 32	2915	40 19 32	2921	38 47 40	2927
	Spica	E.	66 46 15	2956	65 15 7	2962	63 44 6	2968	62 13 13	2973
	Antares	E.	112 38 48	2950	111 7 32	2955	109 36 23	2961	108 5 21	2967

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	22 49 3.68	9.354	S. 7 31 46.3	+56.98	16 10.34	65.42	12 32.77	0.502
Mon.	2	22 52 47.91	9.333	7 8 55.5	57.25	16 10.10	65.34	12 20.49	0.522
Tues.	3	22 56 31.66	9.313	6 45 58.4	57.49	16 9.85	65.27	12 7.72	0.542
Wed.	4	23 0 14.94	9.294	6 22 55.9	57.72	16 9.60	65.20	11 54.47	0.561
Thur.	5	23 3 57.76	9.276	5 59 48.1	57.93	16 9.34	65.14	11 40.77	0.579
Frid.	6	23 7 40.15	9.257	5 36 35.4	58.12	16 9.08	65.08	11 26.65	0.597
Sat.	7	23 11 22.15	9.241	5 13 18.0	58.30	16 8.82	65.02	11 12.15	0.613
Sun.	8	23 15 3.78	9.226	4 49 56.4	58.48	16 8.56	64.96	10 57.26	0.628
Mon.	9	23 18 45.04	9.214	4 26 31.0	58.63	16 8.29	64.91	10 42.00	0.643
Tues.	10	23 22 25.96	9.198	4 3 2.1	58.76	16 8.02	64.86	10 26.41	0.656
Wed.	11	23 26 6.57	9.184	3 39 30.2	58.89	16 7.75	64.81	10 10.50	0.670
Thur.	12	23 29 46.88	9.172	3 15 55.5	59.00	16 7.48	64.77	9 54.30	0.682
Frid.	13	23 33 26.90	9.161	2 52 18.5	59.09	16 7.21	64.73	9 37.81	0.693
Sat.	14	23 37 6.67	9.151	2 28 39.4	59.16	16 6.94	64.69	9 21.07	0.703
Sun.	15	23 40 46.19	9.142	2 4 58.7	59.22	16 6.67	64.65	9 4.09	0.712
Mon.	16	23 44 25.49	9.133	1 41 16.8	59.27	16 6.40	64.62	8 46.89	0.721
Tues.	17	23 48 4.59	9.124	1 17 34.2	59.29	16 6.12	64.59	8 29.49	0.730
Wed.	18	23 51 43.50	9.117	0 53 51.2	59.29	16 5.85	64.56	8 11.89	0.737
Thur.	19	23 55 22.24	9.110	0 30 8.2	59.28	16 5.58	64.54	7 54.11	0.744
Frid.	20	23 59 0.82	9.104	S. 0 6 25.5	59.27	16 5.31	64.52	7 36.19	0.750
Sat.	21	0 2 39.26	9.098	N. 0 17 16.5	59.23	16 5.04	64.50	7 18.13	0.756
Sun.	22	0 6 17.57	9.094	0 40 57.4	59.18	16 4.77	64.48	6 59.94	0.760
Mon.	23	0 9 55.78	9.090	1 4 36.7	59.10	16 4.50	64.47	6 41.64	0.764
Tues.	24	0 13 33.91	9.086	1 28 14.1	59.01	16 4.23	64.46	6 23.26	0.768
Wed.	25	0 17 11.97	9.084	1 51 49.1	58.91	16 3.96	64.46	6 4.82	0.770
Thur.	26	0 20 49.97	9.083	2 15 21.4	58.79	16 3.69	64.45	5 46.32	0.771
Frid.	27	0 24 27.94	9.083	2 38 50.8	58.66	16 3.42	64.45	5 27.81	0.771
Sat.	28	0 28 5.94	9.084	3 2 16.9	58.51	16 3.15	64.46	5 9.31	0.770
Sun.	29	0 31 43.97	9.085	3 25 39.3	58.36	16 2.87	64.47	4 50.82	0.769
Mon.	30	0 35 22.03	9.087	3 48 57.7	58.18	16 2.60	64.48	4 32.37	0.768
Tues.	31	0 39 0.13	9.089	4 12 11.9	57.99	16 2.32	64.49	4 13.98	0.765
Wed.	32	0 42 38.33	9.093	N. 4 35 21.3	+57.80	16 2.05	64.50	3 55.67	0.760

Note.—Mean Time of the Semidiameter passing may be found by subtracting $0^s.18$ from the Sidereal Time. + prefixed to the hourly change of declination, indicates that north declinations are increasing, and south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	22 49 1.71	9.354	S. 7 31 58.3	+56.99	12 32.87	0.502	22 36 28.84
Mon.	2	22 52 45.98	9.334	7 9 7.3	57.26	12 20.59	0.522	22 40 25.39
Tues.	3	22 56 29.77	9.314	6 46 10.1	57.50	12 7.82	0.542	22 44 21.95
Wed.	4	23 0 13.08	9.295	6 23 7.4	57.73	11 54.58	0.561	22 48 18.50
Thur.	5	23 3 55.94	9.277	5 59 59.4	57.94	11 40.88	0.579	22 52 15.06
Frid.	6	23 7 38.37	9.259	5 36 46.6	58.13	11 26.76	0.597	22 56 11.61
Sat.	7	23 11 20.41	9.243	5 13 29.0	58.31	11 12.25	0.613	23 0 8.16
Sun.	8	23 15 2.08	9.228	4 50 7.2	58.49	10 57.37	0.628	23 4 4.71
Mon.	9	23 18 43.38	9.214	4 26 41.6	58.64	10 42.11	0.643	23 8 1.27
Tues.	10	23 22 24.34	9.200	4 3 12.5	58.77	10 26.52	0.656	23 11 57.82
Wed.	11	23 26 4.99	9.186	3 39 40.3	58.90	10 10.61	0.670	23 15 54.38
Thur.	12	23 29 45.34	9.174	3 16 5.4	59.01	9 54.41	0.682	23 19 50.93
Frid.	13	23 33 25.41	9.163	2 52 28.1	59.10	9 37.92	0.693	23 23 47.49
Sat.	14	23 37 5.22	9.153	2 28 48.8	59.17	9 21.18	0.703	23 27 44.04
Sun.	15	23 40 44.79	9.144	2 5 7.8	59.23	9 4.20	0.712	23 31 40.59
Mon.	16	23 44 24.14	9.135	1 41 25.6	59.28	8 47.00	0.721	23 35 37.14
Tues.	17	23 48 3.28	9.126	1 17 42.7	59.30	8 29.58	0.730	23 39 33.70
Wed.	18	23 51 42.24	9.119	0 53 59.4	59.30	8 11.99	0.737	23 43 30.25
Thur.	19	23 55 21.02	9.112	0 30 16.1	59.29	7 54.21	0.744	23 47 26.81
Frid.	20	23 58 59.65	9.106	S. 0 6 33.1	59.28	7 36.29	0.750	23 51 23.36
Sat.	21	0 2 38.13	9.100	N. 0 17 9.2	59.24	7 18.22	0.756	23 55 19.91
Sun.	22	0 6 16.49	9.096	0 40 50.4	59.19	7 0.03	0.760	23 59 16.46
Mon.	23	0 9 54.75	9.092	1 4 30.0	59.11	6 41.73	0.764	0 3 13.02
Tues.	24	0 13 32.93	9.088	1 28 7.7	59.02	6 23.36	0.768	0 7 9.57
Wed.	25	0 17 11.03	9.086	1 51 43.0	58.92	6 4.90	0.770	0 11 6.13
Thur.	26	0 20 49.07	9.085	2 15 15.6	58.80	5 46.39	0.771	0 15 2.68
Frid.	27	0 24 27.11	9.085	2 38 45.4	58.67	5 27.88	0.771	0 18 59.23
Sat.	28	0 28 5.16	9.086	3 2 11.8	58.52	5 9.38	0.770	0 22 56.78
Sun.	29	0 31 43.22	9.087	3 25 34.5	58.37	4 50.88	0.769	0 26 52.34
Mon.	30	0 35 21.32	9.089	3 48 53.2	58.19	4 32.43	0.768	0 30 48.89
Tues.	31	0 38 59.47	9.091	4 12 7.7	58.00	4 14.02	0.765	0 34 45.45
Wed.	32	0 42 37.72	9.096	N. 4 35 17.4	+57.81	3 55.72	0.760	0 38 42.00

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
$+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	60	340 46 38.8	46 40.4	150.34	+0.63	9.9962522	+45.1	1 23 17.46
2	61	341 46 46.0	46 47.4	150.26	0.59	.9963613	45.8	1 19 21.55
3	62	342 46 51.3	46 52.6	150.18	0.53	.9964720	46.4	1 15 25.64
4	63	343 46 54.7	46 55.9	150.10	0.43	.9965842	47.1	1 11 29.74
5	64	344 46 56.3	46 57.4	150.03	0.33	.9966981	47.8	1 7 33.83
6	65	345 46 56.1	46 57.1	149.96	0.20	.9968136	48.4	1 3 37.92
7	66	346 46 54.2	46 55.1	149.89	+0.07	.9969306	49.0	0 59 42.01
8	67	347 46 50.7	46 51.5	149.82	−0.06	.9970487	49.5	0 55 46.10
9	68	348 46 45.5	46 46.2	149.75	0.19	.9971678	49.9	0 51 50.20
10	69	349 46 38.7	46 39.3	149.68	0.30	.9972877	50.2	0 47 54.30
11	70	350 46 30.2	46 30.7	149.61	0.41	.9974085	50.5	0 43 58.39
12	71	351 46 19.9	46 20.3	149.54	0.48	.9975300	50.7	0 40 2.48
13	72	352 46 8.0	46 8.3	149.47	0.53	.9976520	50.9	0 36 6.57
14	73	353 45 54.5	45 54.7	149.40	0.53	.9977742	51.0	0 32 10.66
15	74	354 45 39.2	45 39.3	149.32	0.52	.9978966	51.0	0 28 14.75
16	75	355 45 22.0	45 22.0	149.24	0.48	.9980190	51.0	0 24 18.85
17	76	356 45 2.9	45 2.8	149.16	0.41	.9981414	51.0	0 20 22.94
18	77	357 44 41.7	44 41.5	149.08	0.31	.9982637	51.0	0 16 27.03
19	78	358 44 18.5	44 18.2	148.99	0.20	.9983859	50.9	0 12 31.12
20	79	359 43 53.2	43 52.8	148.90	−0.07	.9985079	50.8	0 8 35.20
21	80	0 43 25.7	43 25.1	148.81	+0.06	.9986297	50.7	0 4 39.31
22	81	1 42 56.2	42 55.5	148.72	0.19	.9987513	50.7	0 0 43.40 23 56 47.49
23	82	2 42 24.3	42 23.5	148.62	0.32	.9988730	50.7	23 52 51.58
24	83	3 41 50.0	41 49.1	148.52	0.43	.9989948	50.7	23 48 55.68
25	84	4 41 13.4	41 12.4	148.42	0.51	.9991166	50.8	23 44 59.77
26	85	5 40 34.4	40 33.3	148.32	0.56	.9992386	50.9	23 41 3.86
27	86	6 39 53.1	39 51.9	148.23	0.60	.9993609	51.0	23 37 7.96
28	87	7 39 9.5	39 8.2	148.13	0.60	.9994835	51.2	23 33 12.05
29	88	8 38 23.6	38 22.2	148.04	0.57	.9996066	51.4	23 29 16.14
30	89	9 37 35.5	37 34.0	147.95	0.51	.9997303	51.6	23 25 20.23
31	90	10 36 45.2	36 43.6	147.86	0.42	.9998545	51.8	23 21 24.32
32	91	11 35 52.8	35 51.1	147.77	+0.31	9.9999792	+52.0	23 17 28.42

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour —9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 54.8	14 52.4	54 37.3	−0.79	54 28.4	−0.69	11 27.3	1.83	12.7
2	14 50.3	14 48.5	54 20.7	0.60	54 14.1	0.50	12 10.0	1.73	13.7
3	14 47.0	14 45.8	54 8.6	0.41	54 4.3	0.30	12 50.5	1.65	14.7
4	14 45.0	14 44.6	54 1.3	−0.19	53 59.6	−0.08	13 29.8	1.62	15.7
5	14 44.5	14 44.8	53 59.4	+0.04	54 0.7	+0.17	14 8.9	1.64	16.7
6	14 45.6	14 46.9	54 3.6	0.31	54 8.2	0.46	14 48.7	1.69	17.7
7	14 48.7	14 51.0	54 14.7	0.62	54 23.2	0.79	15 30.4	1.79	18.7
8	14 53.9	14 57.3	54 33.7	0.96	54 46.4	1.14	16 14.8	1.92	19.7
9	15 1.3	15 5.9	55 1.1	1.32	55 18.2	1.51	17 2.8	2.08	20.7
10	15 11.2	15 17.0	55 37.3	1.69	55 58.6	1.85	17 54.8	2.25	21.7
11	15 23.3	15 30.1	56 21.8	2.02	56 46.9	2.16	18 50.6	2.39	22.7
12	15 37.4	15 45.0	57 13.6	2.28	57 41.6	2.37	19 48.9	2.46	23.7
13	15 52.8	16 0.7	58 10.3	2.42	58 39.4	2.41	20 48.1	2.46	24.7
14	16 8.5	16 16.1	59 8.1	2.36	59 35.9	2.25	21 46.4	2.39	25.7
15	16 23.2	16 29.5	60 2.0	2.08	60 25.5	1.84	22 42.6	2.29	26.7
16	16 35.1	16 39.7	60 46.0	1.55	61 2.6	1.21	23 36.6	2.21	27.7
17	16 43.1	16 45.1	61 14.8	+0.82	61 22.1	+0.40	6		28.7
18	16 45.7	16 44.9	61 24.4	−0.02	61 21.6	−0.44	0 29.1	2.17	0.3
19	16 42.8	16 39.4	61 13.8	0.84	61 1.4	1.21	1 21.0	2.17	1.3
20	16 34.9	16 29.4	60 44.8	1.54	60 24.6	1.82	2 13.6	2.22	2.3
21	16 23.1	16 16.2	60 1.5	2.03	59 36.1	2.19	3 7.7	2.30	3.3
22	16 8.8	16 1.3	59 9.1	2.29	58 41.4	2.33	4 3.8	2.38	4.3
23	15 53.7	15 46.1	58 13.4	2.32	57 45.8	2.27	5 1.4	2.42	5.3
24	15 38.8	15 31.9	57 19.0	2.19	56 53.4	2.08	5 59.3	2.40	6.3
25	15 25.3	15 19.1	56 29.2	1.95	56 6.6	1.81	6 55.8	2.31	7.3
26	15 13.4	15 8.3	55 45.8	1.65	55 26.9	1.49	7 49.5	2.16	8.3
27	15 3.7	14 59.6	55 9.9	1.33	54 54.9	1.17	8 39.6	2.01	9.3
28	14 56.0	14 52.9	54 41.8	1.01	54 30.6	0.86	9 25.9	1.86	10.3
29	14 50.4	14 48.3	54 21.1	0.71	54 13.4	0.57	10 9.1	1.74	11.3
30	14 46.7	14 45.4	54 7.3	0.44	54 2.8	0.32	10 50.0	1.66	12.3
31	14 44.6	14 44.1	53 59.7	−0.20	53 58.0	−0.08	11 29.4	1.62	13.3
32	14 44.0	14 44.3	53 57.6	+0.02	53 58.5	+0.13	12 8.4	1.63	14.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 43 4.97	1.9996	N.18 55 15.8	10.635	0	11 13 58.17	1.8063	N. 9 15 26.5	13.162
1	9 45 4.80	1.9946	18 44 35.4	10.711	1	11 15 46.47	1.8037	9 2 15.9	13.192
2	9 47 4.32	1.9895	18 33 50.5	10.785	2	11 17 34.62	1.8011	8 49 3.5	13.222
3	9 49 3.54	1.9845	18 23 1.2	10.859	3	11 19 22.61	1.7985	8 35 49.4	13.250
4	9 51 2.46	1.9795	18 12 7.5	10.931	4	11 21 10.45	1.7960	8 22 33.6	13.278
5	9 53 1.08	1.9745	18 1 9.4	11.003	5	11 22 58.14	1.7934	8 9 16.1	13.306
6	9 54 59.41	1.9696	17 50 7.1	11.073	6	11 24 45.67	1.7910	7 55 56.9	13.333
7	9 56 57.44	1.9648	17 39 0.6	11.143	7	11 26 33.06	1.7888	7 42 36.2	13.358
8	9 58 55.18	1.9600	17 27 50.0	11.213	8	11 28 20.32	1.7865	7 29 14.0	13.382
9	10 0 52.64	1.9553	17 16 35.2	11.280	9	11 30 7.45	1.7843	7 15 50.4	13.405
10	10 2 49.81	1.9505	17 5 16.4	11.345	10	11 31 54.44	1.7821	7 2 25.4	13.428
11	10 4 46.70	1.9457	16 53 53.8	11.410	11	11 33 41.31	1.7800	6 48 59.0	13.451
12	10 6 43.30	1.9410	16 42 27.3	11.474	12	11 35 28.05	1.7780	6 35 31.3	13.473
13	10 8 39.62	1.9364	16 30 57.0	11.538	13	11 37 14.67	1.7760	6 22 2.3	13.493
14	10 10 35.67	1.9319	16 19 22.8	11.601	14	11 39 1.18	1.7740	6 8 32.1	13.512
15	10 12 31.45	1.9274	16 7 44.9	11.662	15	11 40 47.57	1.7722	5 55 0.8	13.531
16	10 14 26.96	1.9228	15 56 3.4	11.722	16	11 42 33.85	1.7704	5 41 28.4	13.550
17	10 16 22.20	1.9183	15 44 18.3	11.782	17	11 44 20.03	1.7688	5 27 54.9	13.568
18	10 18 17.16	1.9139	15 32 29.6	11.840	18	11 46 6.11	1.7672	5 14 20.3	13.585
19	10 20 11.86	1.9096	15 20 37.5	11.897	19	11 47 52.09	1.7656	5 0 44.7	13.600
20	10 22 6.31	1.9053	15 8 42.0	11.954	20	11 49 37.98	1.7640	4 47 8.2	13.615
21	10 24 0.51	1.9011	14 56 43.1	12.009	21	11 51 23.77	1.7625	4 33 30.9	13.629
22	10 25 54.45	1.8969	14 44 40.9	12.064	22	11 53 9.48	1.7611	4 19 52.7	13.643
23	10 27 48.14	1.8927	N.14 32 35.5	12.118	23	11 54 55.11	1.7597	N. 4 6 13.7	13.656
MONDAY 2.					WEDNESDAY 4.				
0	10 29 41.58	1.8886	N.14 20 26.8	12.170	0	11 56 40.65	1.7584	N. 3 52 33.9	13.669
1	10 31 34.78	1.8846	14 8 15.0	12.221	1	11 58 26.12	1.7572	3 38 53.4	13.680
2	10 33 27.74	1.8806	13 56 0.2	12.272	2	12 0 11.52	1.7561	3 25 12.3	13.690
3	10 35 20.45	1.8766	13 43 42.4	12.322	3	12 1 56.86	1.7550	3 11 30.6	13.700
4	10 37 12.93	1.8727	13 31 21.6	12.372	4	12 3 42.13	1.7540	2 57 48.3	13.710
5	10 39 5.18	1.8689	13 18 57.9	12.420	5	12 5 27.34	1.7531	2 44 5.4	13.718
6	10 40 57.20	1.8651	13 6 31.2	12.467	6	12 7 12.50	1.7522	2 30 22.1	13.725
7	10 42 48.99	1.8614	12 54 1.8	12.513	7	12 8 57.60	1.7513	2 16 38.4	13.732
8	10 44 40.56	1.8577	12 41 29.7	12.558	8	12 10 42.66	1.7505	2 2 54.2	13.738
9	10 46 31.92	1.8541	12 28 54.9	12.602	9	12 12 27.67	1.7498	1 49 9.7	13.743
10	10 48 23.06	1.8505	12 16 17.5	12.645	10	12 14 12.64	1.7492	1 35 24.9	13.748
11	10 50 13.98	1.8469	12 3 37.5	12.688	11	12 15 57.58	1.7486	1 21 39.9	13.752
12	10 52 4.69	1.8435	11 50 54.9	12.730	12	12 17 42.48	1.7480	1 7 54.7	13.755
13	10 53 55.20	1.8401	11 38 9.9	12.770	13	12 19 27.35	1.7475	0 54 9.3	13.758
14	10 55 45.51	1.8367	11 25 22.4	12.810	14	12 21 12.20	1.7471	0 40 23.8	13.760
15	10 57 35.61	1.8334	11 12 32.6	12.849	15	12 22 57.03	1.7469	0 26 38.2	13.760
16	10 59 25.52	1.8302	10 59 40.5	12.888	16	12 24 41.84	1.7467	N. 0 12 52.6	13.760
17	11 1 15.24	1.8270	10 46 46.1	12.925	17	12 26 26.64	1.7467	S. 0 0 53.1	13.760
18	11 3 4.77	1.8239	10 33 49.5	12.962	18	12 28 11.44	1.7467	0 14 38.7	13.759
19	11 4 54.11	1.8209	10 20 50.7	12.997	19	12 29 56.23	1.7466	0 28 24.2	13.757
20	11 6 43.27	1.8179	10 7 49.9	13.031	20	12 31 41.02	1.7465	0 42 9.6	13.754
21	11 8 32.26	1.8149	9 54 47.1	13.064	21	12 33 25.80	1.7465	0 55 54.7	13.750
22	11 10 21.07	1.8120	9 41 42.3	13.097	22	12 35 10.59	1.7466	1 9 39.6	13.746
23	11 12 9.71	1.8091	9 28 35.4	13.130	23	12 36 55.39	1.7468	1 23 24.3	13.742
24	11 13 58.17	1.8063	N. 9 15 26.5	13.162	24	12 38 40.21	1.7471	S. 1 37 8.7	13.737

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 5.					SATURDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 38 40.21	1.7471	S. 1 37 8.7	13.737	0	14 4 6.00	1.8377	S. 12 16 13.3	12.603
1	12 40 25.05	1.7475	1 50 52.7	13.730	1	14 5 56.36	1.8412	12 28 48.2	12.561
2	12 42 9.91	1.7479	2 4 36.3	13.723	2	14 7 46.94	1.8448	12 41 20.7	12.519
3	12 43 54.79	1.7484	2 18 19.5	13.715	3	14 9 37.74	1.8484	12 53 50.6	12.475
4	12 45 39.71	1.7490	2 32 2.2	13.707	4	14 11 28.76	1.8520	13 6 17.8	12.430
5	12 47 24.66	1.7496	2 45 44.4	13.697	5	14 13 20.00	1.8557	13 18 42.2	12.384
6	12 49 9.65	1.7502	2 59 25.9	13.687	6	14 15 11.45	1.8594	13 31 3.8	12.337
7	12 50 54.68	1.7509	3 13 6.8	13.677	7	14 17 3.13	1.8633	13 43 22.6	12.290
8	12 52 39.76	1.7516	3 26 47.1	13.667	8	14 18 55.06	1.8673	13 55 38.6	12.242
9	12 54 24.88	1.7524	3 40 26.8	13.655	9	14 20 47.23	1.8714	14 7 51.6	12.192
10	12 56 10.05	1.7534	3 54 5.7	13.642	10	14 22 39.64	1.8755	14 20 1.6	12.142
11	12 57 55.29	1.7545	4 7 43.8	13.627	11	14 24 32.29	1.8796	14 32 8.7	12.091
12	12 59 40.60	1.7556	4 21 20.9	13.612	12	14 26 25.19	1.8838	14 44 12.7	12.040
13	13 1 25.97	1.7567	4 34 57.2	13.598	13	14 28 18.34	1.8880	14 56 13.5	11.987
14	13 3 11.41	1.7578	4 48 32.7	13.583	14	14 30 11.75	1.8923	15 8 11.2	11.933
15	13 4 56.91	1.7590	5 2 7.2	13.567	15	14 32 5.42	1.8966	15 20 5.6	11.879
16	13 6 42.49	1.7604	5 15 40.7	13.550	16	14 33 59.35	1.9010	15 31 56.7	11.825
17	13 8 28.16	1.7619	5 29 13.1	13.532	17	14 35 53.55	1.9055	15 43 44.5	11.769
18	13 10 13.92	1.7634	5 42 44.4	13.513	18	14 37 48.02	1.9101	15 55 28.9	11.712
19	13 11 59.77	1.7649	5 56 14.6	13.493	19	14 39 42.77	1.9147	16 7 9.8	11.654
20	13 13 45.71	1.7665	6 9 43.6	13.473	20	14 41 37.79	1.9194	16 18 47.3	11.595
21	13 15 31.74	1.7681	6 23 11.4	13.453	21	14 43 33.09	1.9241	16 30 21.2	11.535
22	13 17 17.87	1.7698	6 36 37.9	13.432	22	14 45 28.68	1.9288	16 41 51.5	11.474
23	13 19 4.11	1.7716	S. 6 50 3.1	13.409	23	14 47 24.56	1.9336	S. 16 53 18.1	11.411
	FRIDAY 6.					SUNDAY 8.			
0	13 20 50.47	1.7735	S. 7 3 26.9	13.385	0	14 49 20.72	1.9385	S. 17 4 40.9	11.349
1	13 22 36.94	1.7754	7 16 49.3	13.361	1	14 51 17.18	1.9435	17 15 59.9	11.286
2	13 24 23.52	1.7774	7 30 10.3	13.337	2	14 53 13.94	1.9485	17 27 15.2	11.222
3	13 26 10.22	1.7794	7 43 29.8	13.311	3	14 55 11.00	1.9535	17 38 26.6	11.157
4	13 27 57.05	1.7815	7 56 47.7	13.285	4	14 57 8.36	1.9585	17 49 34.0	11.090
5	13 29 44.01	1.7837	8 10 4.1	13.259	5	14 59 6.03	1.9637	18 0 37.4	11.022
6	13 31 31.10	1.7859	8 23 18.8	13.232	6	15 1 4.02	1.9690	18 11 36.6	10.953
7	13 33 18.33	1.7883	8 36 31.8	13.204	7	15 3 2.32	1.9742	18 22 31.7	10.884
8	13 35 5.70	1.7907	8 49 43.2	13.175	8	15 5 0.93	1.9795	18 33 22.7	10.814
9	13 36 53.21	1.7931	9 2 52.8	13.145	9	15 6 59.86	1.9848	18 44 9.4	10.743
10	13 38 40.87	1.7957	9 16 0.6	13.115	10	15 8 59.11	1.9902	18 54 51.8	10.671
11	13 40 28.69	1.7983	9 29 6.5	13.084	11	15 10 58.69	1.9957	19 5 29.8	10.597
12	13 42 16.67	1.8009	9 42 10.5	13.052	12	15 12 58.61	2.0013	19 16 3.4	10.523
13	13 44 4.81	1.8036	9 55 12.6	13.019	13	15 14 58.86	2.0068	19 26 32.5	10.447
14	13 45 53.11	1.8064	10 8 12.7	12.985	14	15 16 59.44	2.0123	19 36 57.0	10.370
15	13 47 41.57	1.8092	10 21 10.7	12.950	15	15 19 0.34	2.0179	19 47 16.9	10.293
16	13 49 30.21	1.8121	10 34 6.6	12.915	16	15 21 1.58	2.0236	19 57 32.1	10.214
17	13 51 19.03	1.8150	10 47 0.4	12.879	17	15 23 3.17	2.0294	20 7 42.6	10.135
18	13 53 8.02	1.8180	10 59 52.1	12.843	18	15 25 5.12	2.0353	20 17 48.3	10.054
19	13 54 57.20	1.8212	11 12 41.5	12.805	19	15 27 7.41	2.0411	20 27 49.1	9.972
20	13 56 46.57	1.8244	11 25 28.6	12.767	20	15 29 10.05	2.0469	20 37 45.0	9.889
21	13 58 36.13	1.8276	11 38 13.4	12.727	21	15 31 13.03	2.0528	20 47 35.8	9.805
22	14 0 25.89	1.8309	11 50 55.8	12.687	22	15 33 16.37	2.0587	20 57 21.6	9.721
23	14 2 15.84	1.8343	12 3 35.8	12.645	23	15 35 20.07	2.0647	21 7 2.3	9.635
24	14 4 6.00	1.8377	S. 12 16 13.3	12.603	24	15 37 24.13	2.0707	S. 21 16 37.8	9.547

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 9.					WEDNESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 37 24.13	2.0707	S.21 16 37.8	9.547	0	17 24 0.13	2.3683	S.26 52 46.1	4.009
1	15 39 28.55	2.0767	21 26 8.0	9.459	1	17 26 22.40	2.3739	26 56 42.3	3.865
2	15 41 33.33	2.0827	21 35 32.9	9.370	2	17 28 45.00	2.3795	27 0 29.9	3.720
3	15 43 38.48	2.0887	21 44 52.4	9.279	3	17 31 7.94	2.3850	27 4 8.7	3.574
4	15 45 43.99	2.0948	21 54 6.4	9.188	4	17 33 31.21	2.3905	27 7 38.7	3.427
5	15 47 49.87	2.1010	22 3 14.9	9.096	5	17 35 54.80	2.3958	27 10 59.9	3.280
6	15 49 56.12	2.1072	22 12 17.9	9.002	6	17 38 18.70	2.4010	27 14 12.3	3.131
7	15 52 2.74	2.1134	22 21 15.2	8.907	7	17 40 42.92	2.4062	27 17 15.7	2.981
8	15 54 9.74	2.1197	22 30 6.7	8.810	8	17 43 7.45	2.4113	27 20 10.0	2.829
9	15 56 17.11	2.1259	22 38 52.4	8.712	9	17 45 32.28	2.4163	27 22 55.1	2.675
10	15 58 24.85	2.1322	22 47 32.2	8.614	10	17 47 57.41	2.4213	27 25 31.0	2.522
11	16 0 32.97	2.1385	22 56 6.1	8.515	11	17 50 22.84	2.4263	27 27 57.8	2.369
12	16 2 41.48	2.1448	23 4 34.1	8.415	12	17 52 48.57	2.4312	27 30 15.3	2.214
13	16 4 50.36	2.1511	23 12 56.0	8.313	13	17 55 14.58	2.4359	27 32 23.4	2.058
14	16 6 59.62	2.1575	23 21 11.7	8.209	14	17 57 40.87	2.4405	27 34 22.2	1.901
15	16 9 9.26	2.1638	23 29 21.1	8.105	15	18 0 7.43	2.4450	27 36 11.5	1.743
16	16 11 19.28	2.1702	23 37 24.2	8.000	16	18 2 34.26	2.4495	27 37 51.3	1.583
17	16 13 29.69	2.1767	23 45 21.1	7.895	17	18 5 1.36	2.4539	27 39 21.5	1.423
18	16 15 40.49	2.1832	23 53 11.6	7.788	18	18 7 28.72	2.4582	27 40 42.1	1.263
19	16 17 51.67	2.1895	24 0 55.6	7.679	19	18 9 56.33	2.4623	27 41 53.0	1.102
20	16 20 3.23	2.1958	24 8 33.0	7.568	20	18 12 24.18	2.4663	27 42 54.3	0.940
21	16 22 15.17	2.2021	24 16 3.7	7.456	21	18 14 52.28	2.4703	27 43 45.8	0.777
22	16 24 27.49	2.2085	24 23 27.7	7.344	22	18 17 20.61	2.4742	27 44 27.5	0.613
23	16 26 40.20	2.2149	S.24 30 45.0	7.230	23	18 19 49.17	2.4780	S.27 44 59.3	0.448
	TUESDAY 10.					THURSDAY 12.			
0	16 28 53.29	2.2213	S.24 37 55.4	7.115	0	18 22 17.96	2.4817	S.27 45 21.2	0.283
1	16 31 6.76	2.2277	24 44 58.9	7.000	1	18 24 46.96	2.4852	27 45 33.2	−0.117
2	16 33 20.62	2.2342	24 51 55.4	6.883	2	18 27 16.17	2.4885	27 45 35.2	+0.051
3	16 35 34.86	2.2406	24 58 44.9	6.765	3	18 29 45.58	2.4918	27 45 27.1	0.219
4	16 37 49.49	2.2470	25 5 27.2	6.645	4	18 32 15.19	2.4950	27 45 8.9	0.387
5	16 40 4.50	2.2534	25 12 2.3	6.524	5	18 34 44.98	2.4982	27 44 40.6	0.555
6	16 42 19.88	2.2597	25 18 30.1	6.402	6	18 37 14.96	2.5012	27 44 2.3	0.724
7	16 44 35.65	2.2660	25 24 50.5	6.279	7	18 39 45.12	2.5040	27 43 13.8	0.894
8	16 46 51.79	2.2722	25 31 3.6	6.155	8	18 42 15.44	2.5067	27 42 14.9	1.066
9	16 49 8.31	2.2785	25 37 9.2	6.030	9	18 44 45.92	2.5093	27 41 5.8	1.237
10	16 51 25.21	2.2848	25 43 7.2	5.904	10	18 47 16.56	2.5118	27 39 46.4	1.409
11	16 53 42.48	2.2911	25 48 57.6	5.776	11	18 49 47.34	2.5143	27 38 16.7	1.580
12	16 56 0.13	2.2973	25 54 40.3	5.647	12	18 52 18.27	2.5167	27 36 36.8	1.752
13	16 58 18.15	2.3034	26 0 15.2	5.517	13	18 54 49.34	2.5189	27 34 46.5	1.926
14	17 0 36.54	2.3095	26 5 42.3	5.385	14	18 57 20.53	2.5208	27 32 45.7	2.100
15	17 2 55.29	2.3156	26 11 1.4	5.252	15	18 59 51.83	2.5227	27 30 34.4	2.274
16	17 5 14.41	2.3217	26 16 12.5	5.118	16	19 2 23.25	2.5245	27 28 12.7	2.448
17	17 7 33.89	2.3276	26 21 15.6	4.984	17	19 4 54.77	2.5262	27 25 40.6	2.622
18	17 9 53.72	2.3335	26 26 10.6	4.848	18	19 7 26.39	2.5278	27 22 58.1	2.796
19	17 12 13.91	2.3395	26 30 57.4	4.711	19	19 9 58.10	2.5292	27 20 5.1	2.972
20	17 14 34.46	2.3455	26 35 35.9	4.573	20	19 12 29.89	2.5305	27 17 1.5	3.148
21	17 16 55.36	2.3513	26 40 6.1	4.433	21	19 15 1.76	2.5317	27 13 47.3	3.324
22	17 19 16.61	2.3570	26 44 27.9	4.293	22	19 17 33.70	2.5328	27 10 22.6	3.500
23	17 21 38.20	2.3627	26 48 41.3	4.151	23	19 20 5.69	2.5338	27 6 47.3	3.675
24	17 24 0.13	2.3683	S.26 52 46.1	4.009	24	19 22 37.74	2.5346	S.27 3 1.6	3.850

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 22 37.74	2.5346	S.27 3 1.6	3.850
1	19 25 9.84	2.5353	26 59 5.3	4.027
2	19 27 41.97	2.5358	26 54 58.4	4.204
3	19 30 14.13	2.5363	26 50 40.9	4.380
4	19 32 46.32	2.5367	26 46 12.9	4.555
5	19 35 18.52	2.5369	26 41 34.3	4.731
6	19 37 50.74	2.5370	26 36 45.2	4.906
7	19 40 22.96	2.5369	26 31 45.6	5.082
8	19 42 55.17	2.5368	26 26 35.3	5.258
9	19 45 27.37	2.5366	26 21 14.5	5.434
10	19 47 59.56	2.5363	26 15 43.2	5.610
11	19 50 31.72	2.5358	26 10 1.3	5.785
12	19 53 3.84	2.5351	26 4 9.0	5.960
13	19 55 35.92	2.5343	25 58 6.2	6.135
14	19 58 7.96	2.5335	25 51 52.9	6.310
15	20 0 39.96	2.5327	25 45 29.1	6.484
16	20 3 11.90	2.5317	25 38 54.9	6.657
17	20 5 43.76	2.5306	25 32 10.3	6.830
18	20 8 15.55	2.5293	25 25 15.4	7.003
19	20 10 47.27	2.5280	25 18 10.1	7.175
20	20 13 18.90	2.5266	25 10 54.4	7.347
21	20 15 50.45	2.5251	25 3 28.5	7.518
22	20 18 21.91	2.5234	24 55 52.3	7.688
23	20 20 53.26	2.5215	S.24 48 5.9	7.858

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 23 24.49	2.5196	S.24 40 9.3	8.028
1	20 25 55.61	2.5178	24 32 2.5	8.197
2	20 28 26.62	2.5159	24 23 45.6	8.365
3	20 30 57.52	2.5139	24 15 18.8	8.532
4	20 33 28.29	2.5117	24 6 41.9	8.699
5	20 35 58.92	2.5092	23 57 55.0	8.865
6	20 38 29.41	2.5070	23 48 58.1	9.030
7	20 40 59.76	2.5046	23 39 51.4	9.194
8	20 43 29.97	2.5021	23 30 34.8	9.357
9	20 46 0.02	2.4996	23 21 8.5	9.519
10	20 48 29.92	2.4970	23 11 32.5	9.681
11	20 50 59.66	2.4942	23 1 46.8	9.841
12	20 53 29.23	2.4914	22 51 51.5	10.001
13	20 55 58.63	2.4886	22 41 46.7	10.160
14	20 58 27.87	2.4858	22 31 32.4	10.318
15	21 0 56.93	2.4828	22 21 8.6	10.474
16	21 3 25.81	2.4798	22 10 35.5	10.629
17	21 5 54.51	2.4768	21 59 53.1	10.783
18	21 8 23.03	2.4737	21 49 1.6	10.936
19	21 10 51.36	2.4705	21 38 0.9	11.088
20	21 13 19.50	2.4673	21 26 51.1	11.238
21	21 15 47.44	2.4641	21 15 32.3	11.388
22	21 18 15.19	2.4609	21 4 4.6	11.536
23	21 20 42.75	2.4576	20 52 28.0	11.684
24	21 23 10.10	2.4542	S.20 40 42.6	11.830

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 23 10.10	2.4542	S.20 40 42.6	11.830
1	21 25 37.25	2.4508	20 28 48.5	11.974
2	21 28 4.20	2.4474	20 16 45.8	12.116
3	21 30 30.94	2.4439	20 4 34.6	12.257
4	21 32 57.47	2.4404	19 52 15.0	12.397
5	21 35 23.80	2.4369	19 39 46.9	12.536
6	21 37 49.91	2.4334	19 27 10.6	12.674
7	21 40 15.81	2.4299	19 14 26.0	12.810
8	21 42 41.50	2.4264	19 1 33.3	12.944
9	21 45 6.98	2.4229	18 48 32.7	13.076
10	21 47 32.25	2.4193	18 35 24.2	13.208
11	21 49 57.30	2.4156	18 22 7.7	13.338
12	21 52 22.12	2.4119	18 8 43.5	13.467
13	21 54 46.73	2.4084	17 55 11.6	13.594
14	21 57 11.14	2.4049	17 41 32.2	13.719
15	21 59 35.33	2.4013	17 27 45.4	13.842
16	22 1 59.30	2.3977	17 13 51.2	13.964
17	22 4 23.06	2.3941	16 59 49.7	14.084
18	22 6 46.60	2.3906	16 45 41.1	14.203
19	22 9 9.93	2.3871	16 31 25.4	14.320
20	22 11 33.05	2.3835	16 17 2.7	14.435
21	22 13 55.95	2.3799	16 2 33.2	14.548
22	22 16 18.64	2.3764	15 47 57.0	14.660
23	22 18 41.12	2.3729	S.15 33 14.1	14.770

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 21 3.39	2.3694	S.15 18 24.6	14.879
1	22 23 25.45	2.3659	15 3 28.7	14.985
2	22 25 47.31	2.3624	14 48 26.5	15.089
3	22 28 8.95	2.3590	14 33 18.1	15.191
4	22 30 30.39	2.3557	14 18 3.6	15.293
5	22 32 51.64	2.3524	14 2 43.0	15.393
6	22 35 12.68	2.3490	13 47 16.5	15.490
7	22 37 33.52	2.3457	13 31 44.2	15.585
8	22 39 54.17	2.3425	13 16 6.3	15.678
9	22 42 14.62	2.3393	13 0 22.9	15.770
10	22 44 34.88	2.3361	12 44 34.0	15.859
11	22 46 54.96	2.3329	12 28 39.8	15.947
12	22 49 14.84	2.3298	12 12 40.4	16.033
13	22 51 34.54	2.3268	11 56 35.9	16.117
14	22 53 54.06	2.3237	11 40 26.4	16.199
15	22 56 13.39	2.3208	11 24 12.0	16.279
16	22 58 32.55	2.3179	11 7 52.9	16.357
17	23 0 51.54	2.3151	10 51 29.2	16.433
18	23 3 10.36	2.3123	10 35 1.0	16.507
19	23 5 29.01	2.3094	10 18 28.4	16.579
20	23 7 47.50	2.3066	10 1 51.5	16.650
21	23 10 5.81	2.3039	9 45 10.4	16.718
22	23 12 23.97	2.3014	9 28 25.3	16.784
23	23 14 41.98	2.2989	9 11 36.3	16.847
24	23 16 59.84	2.2964	S. 8 54 43.6	16.909

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 16 59.84	2.2964	S. 8 54 43.6	16.909
1	23 19 17.55	2.2940	8 37 47.2	16.970
2	23 21 35.12	2.2916	8 20 47.2	17.029
3	23 23 52.54	2.2892	8 3 43.7	17.085
4	23 26 9.82	2.2869	7 46 37.0	17.139
5	23 28 26.98	2.2848	7 29 27.1	17.190
6	23 30 44.00	2.2827	7 12 14.2	17.239
7	23 33 0.90	2.2806	6 54 58.4	17.287
8	23 35 17.68	2.2786	6 37 39.7	17.333
9	23 37 34.33	2.2766	6 20 18.4	17.377
10	23 39 50.87	2.2748	6 2 54.5	17.418
11	23 42 7.31	2.2730	5 45 28.2	17.458
12	23 44 23.64	2.2713	5 27 59.6	17.495
13	23 46 39.87	2.2696	5 10 28.9	17.530
14	23 48 56.00	2.2680	4 52 56.1	17.564
15	23 51 12.03	2.2664	4 35 21.3	17.595
16	23 53 27.97	2.2650	4 17 44.7	17.624
17	23 55 43.83	2.2636	4 0 6.4	17.650
18	23 57 59.61	2.2623	3 42 26.7	17.675
19	0 0 15.31	2.2611	3 24 45.5	17.698
20	0 2 30.94	2.2599	3 7 3.0	17.718
21	0 4 46.50	2.2588	2 49 19.3	17.737
22	0 7 2.00	2.2578	2 31 34.6	17.753
23	0 9 17.44	2.2568	S. 2 13 48.9	17.767

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 11 32.82	2.2559	S. 1 56 2.5	17.779
1	0 13 48.15	2.2552	1 38 15.4	17.789
2	0 16 3.44	2.2545	1 20 27.7	17.797
3	0 18 18.69	2.2538	1 2 39.7	17.803
4	0 20 33.90	2.2532	0 44 51.4	17.807
5	0 22 49.08	2.2526	0 27 2.8	17.809
6	0 25 4.22	2.2522	S. 0 9 14.2	17.809
7	0 27 19.34	2.2519	N. 0 8 34.3	17.807
8	0 29 34.45	2.2516	0 26 22.6	17.802
9	0 31 49.54	2.2514	0 44 10.5	17.795
10	0 34 4.62	2.2513	1 1 58.0	17.787
11	0 36 19.70	2.2512	1 19 44.9	17.776
12	0 38 34.76	2.2511	1 37 31.1	17.764
13	0 40 49.83	2.2512	1 55 16.5	17.749
14	0 43 4.92	2.2514	2 13 0.9	17.731
15	0 45 20.01	2.2517	2 30 44.2	17.712
16	0 47 35.12	2.2520	2 48 26.3	17.691
17	0 49 50.26	2.2524	3 6 7.1	17.668
18	0 52 5.41	2.2528	3 23 46.4	17.643
19	0 54 20.59	2.2534	3 41 24.2	17.616
20	0 56 35.82	2.2540	3 59 0.3	17.586
21	0 58 51.08	2.2547	4 16 34.5	17.554
22	1 1 6.38	2.2554	4 34 6.8	17.522
23	1 3 21.73	2.2563	4 51 37.1	17.487
24	1 5 37.13	2.2572	N. 5 9 5.2	17.449

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 5 37.13	2.2572	N. 5 9 5.2	17.449
1	1 7 52.59	2.2581	5 26 31.0	17.410
2	1 10 8.11	2.2591	5 43 54.4	17.369
3	1 12 23.68	2.2601	6 1 15.2	17.325
4	1 14 39.32	2.2613	6 18 33.3	17.280
5	1 16 55.04	2.2626	6 35 48.7	17.234
6	1 19 10.84	2.2639	6 53 1.3	17.185
7	1 21 26.72	2.2653	7 10 10.9	17.133
8	1 23 42.68	2.2667	7 27 17.3	17.078
9	1 25 58.72	2.2682	7 44 20.3	17.023
10	1 28 14.86	2.2698	8 1 20.0	16.967
11	1 30 31.10	2.2714	8 18 16.3	16.908
12	1 32 47.43	2.2731	8 35 9.0	16.848
13	1 35 3.87	2.2748	8 51 58.0	16.785
14	1 37 20.42	2.2766	9 8 43.2	16.720
15	1 39 37.07	2.2785	9 25 24.4	16.653
16	1 41 53.84	2.2804	9 42 1.5	16.584
17	1 44 10.73	2.2824	9 58 34.5	16.515
18	1 46 27.73	2.2844	10 15 3.3	16.443
19	1 48 44.86	2.2866	10 31 27.7	16.369
20	1 51 2.13	2.2888	10 47 47.6	16.292
21	1 53 19.52	2.2910	11 4 2.8	16.214
22	1 55 37.04	2.2932	11 20 13.3	16.135
23	1 57 54.71	2.2955	N.11 36 19.1	16.054

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 0 12.51	2.2978	N.11 52 19.9	15.972
1	2 2 30.45	2.3002	12 8 15.7	15.887
2	2 4 48.55	2.3027	12 24 6.4	15.799
3	2 7 6.79	2.3052	12 39 51.7	15.711
4	2 9 25.18	2.3078	12 55 31.7	15.621
5	2 11 43.73	2.3104	13 11 6.3	15.529
6	2 14 2.43	2.3130	13 26 35.3	15.436
7	2 16 21.29	2.3157	13 41 58.6	15.341
8	2 18 40.32	2.3184	13 57 16.2	15.245
9	2 20 59.50	2.3211	14 12 28.0	15.147
10	2 23 18.85	2.3239	14 27 33.8	15.046
11	2 25 38.38	2.3268	14 42 33.6	14.944
12	2 27 58.07	2.3296	14 57 27.1	14.840
13	2 30 17.93	2.3324	15 12 14.4	14.735
14	2 32 37.97	2.3353	15 26 55.4	14.628
15	2 34 58.18	2.3383	15 41 29.9	14.520
16	2 37 18.57	2.3413	15 55 57.8	14.410
17	2 39 39.14	2.3443	16 10 19.1	14.299
18	2 41 59.89	2.3473	16 24 33.7	14.186
19	2 44 20.82	2.3503	16 38 41.4	14.071
20	2 46 41.93	2.3533	16 52 42.3	13.955
21	2 49 3.22	2.3563	17 6 36.1	13.838
22	2 51 24.69	2.3594	17 20 22.8	13.719
23	2 53 46.36	2.3626	17 34 2.4	13.598
24	2 56 8.21	2.3657	N.17 47 34.7	13.477

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 56 8.21	2.3657	N.17 47 34.7	13.477
1	2 58 30.25	2.3688	18 0 59.6	13.354
2	3 0 52.48	2.3719	18 14 17.1	13.230
3	3 3 14.88	2.3750	18 27 27.1	13.104
4	3 5 37.47	2.3781	18 40 29.5	12.976
5	3 8 0.26	2.3813	18 53 24.2	12.846
6	3 10 23.23	2.3844	19 6 11.0	12.715
7	3 12 46.39	2.3875	19 18 50.0	12.584
8	3 15 9.74	2.3905	19 31 21.2	12.452
9	3 17 33.26	2.3936	19 43 44.3	12.318
10	3 19 56.97	2.3967	19 55 59.3	12.183
11	3 22 20.87	2.3998	20 8 6.2	12.047
12	3 24 44.96	2.4029	20 20 4.9	11.909
13	3 27 9.23	2.4060	20 31 55.3	11.770
14	3 29 33.68	2.4090	20 43 37.3	11.629
15	3 31 58.31	2.4120	20 55 10.7	11.486
16	3 34 23.12	2.4150	21 6 35.6	11.344
17	3 36 48.11	2.4179	21 17 52.1	11.202
18	3 39 13.27	2.4208	21 28 59.9	11.058
19	3 41 38.61	2.4237	21 39 59.0	10.912
20	3 44 4.12	2.4266	21 50 49.3	10.764
21	3 46 29.80	2.4294	22 1 30.7	10.616
22	3 48 55.65	2.4322	22 12 3.2	10.468
23	3 51 21.67	2.4350	N.22 22 26.8	10.318

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 53 47.85	2.4377	N.22 32 41.3	10.166
1	3 56 14.19	2.4403	22 42 46.7	10.014
2	3 58 40.69	2.4429	22 52 43.0	9.863
3	4 1 7.34	2.4455	23 2 30.2	9.710
4	4 3 34.14	2.4480	23 12 8.1	9.555
5	4 6 1.10	2.4505	23 21 36.7	9.399
6	4 8 28.20	2.4529	23 30 55.9	9.242
7	4 10 55.44	2.4552	23 40 5.7	9.085
8	4 13 22.82	2.4575	23 49 6.1	8.928
9	4 15 50.34	2.4598	23 57 57.0	8.769
10	4 18 17.99	2.4619	24 6 38.4	8.610
11	4 20 45.77	2.4639	24 15 10.2	8.450
12	4 23 13.66	2.4658	24 23 32.4	8.289
13	4 25 41.67	2.4678	24 31 44.9	8.128
14	4 28 9.80	2.4698	24 39 47.7	7.966
15	4 30 38.05	2.4717	24 47 40.8	7.804
16	4 33 6.40	2.4734	24 55 24.1	7.640
17	4 35 34.85	2.4750	25 2 57.6	7.477
18	4 38 3.40	2.4766	25 10 21.3	7.313
19	4 40 32.04	2.4781	25 17 35.1	7.148
20	4 43 0.77	2.4795	25 24 39.0	6.982
21	4 45 29.58	2.4808	25 31 32.9	6.816
22	4 47 58.46	2.4820	25 38 16.9	6.650
23	4 50 27.42	2.4832	25 44 50.9	6.484
24	4 52 56.44	2.4842	N.25 51 14.9	6.317

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 52 56.44	2.4842	N.25 51 14.9	6.317
1	4 55 25.52	2.4852	25 57 28.9	6.150
2	4 57 54.66	2.4861	26 3 32.8	5.982
3	5 0 23.85	2.4869	26 9 26.7	5.814
4	5 2 53.08	2.4875	26 15 10.5	5.646
5	5 5 22.35	2.4880	26 20 44.2	5.477
6	5 7 51.64	2.4885	26 26 7.7	5.308
7	5 10 20.96	2.4889	26 31 21.1	5.139
8	5 12 50.30	2.4892	26 36 24.4	4.971
9	5 15 19.66	2.4893	26 41 17.6	4.803
10	5 17 49.02	2.4894	26 46 0.7	4.633
11	5 20 18.39	2.4894	26 50 33.6	4.463
12	5 22 47.75	2.4892	26 54 56.2	4.293
13	5 25 17.10	2.4890	26 59 8.7	4.124
14	5 27 46.43	2.4887	27 3 11.1	3.955
15	5 30 15.74	2.4883	27 7 3.3	3.785
16	5 32 45.02	2.4877	27 10 45.3	3.616
17	5 35 14.26	2.4869	27 14 17.2	3.447
18	5 37 43.45	2.4861	27 17 38.9	3.277
19	5 40 12.59	2.4853	27 20 50.4	3.108
20	5 42 41.68	2.4843	27 23 51.8	2.940
21	5 45 10.71	2.4832	27 26 43.2	2.772
22	5 47 39.67	2.4820	27 29 24.4	2.603
23	5 50 8.55	2.4806	N.27 31 55.5	2.434

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 52 37.34	2.4791	N.27 34 16.4	2.265
1	5 55 6.04	2.4776	27 36 27.3	2.097
2	5 57 34.65	2.4761	27 38 28.1	1.930
3	6 0 3.17	2.4744	27 40 18.9	1.764
4	6 2 31.58	2.4724	27 41 59.7	1.597
5	6 4 59.86	2.4703	27 43 30.5	1.429
6	6 7 28.01	2.4682	27 44 51.2	1.263
7	6 9 56.03	2.4660	27 46 2.0	1.098
8	6 12 23.93	2.4638	27 47 2.9	0.933
9	6 14 51.69	2.4614	27 47 54.0	0.769
10	6 17 19.30	2.4588	27 48 35.2	0.604
11	6 19 46.75	2.4562	27 49 6.5	0.439
12	6 22 14.04	2.4534	27 49 27.9	0.276
13	6 24 41.16	2.4506	27 49 39.6	+0.114
14	6 27 8.11	2.4477	27 49 41.6	−0.049
15	6 29 34.89	2.4447	27 49 33.8	0.211
16	6 32 1.48	2.4415	27 49 16.3	0.372
17	6 34 27.88	2.4382	27 48 49.2	0.531
18	6 36 54.07	2.4349	27 48 12.6	0.690
19	6 39 20.06	2.4315	27 47 26.4	0.849
20	6 41 45.85	2.4281	27 46 30.7	1.008
21	6 44 11.43	2.4245	27 45 25.4	1.167
22	6 46 36.79	2.4207	27 44 10.7	1.323
23	6 49 1.92	2.4168	27 42 46.7	1.479
24	6 51 26.81	2.4129	N.27 41 13.3	1.635

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 51 26.81	2.4129	N.27 41 13.3	1.635	0	8 41 31.15	2.1571	N.23 41 17.8	7.969
1	6 53 51.47	2.4089	27 39 30.6	1.789	1	8 43 40.40	2.1511	23 33 16.5	8.074
2	6 56 15.89	2.4049	27 37 38.7	1.943	2	8 45 49.29	2.1452	23 25 8.9	8.178
3	6 58 40.06	2.4008	27 35 37.5	2.096	3	8 47 57.83	2.1393	23 16 55.1	8.282
4	7 1 3.98	2.3966	27 33 27.2	2.248	4	8 50 6.02	2.1334	23 8 35.1	8.384
5	7 3 27.65	2.3922	27 31 7.8	2.398	5	8 52 13.85	2.1274	23 0 9.0	8.487
6	7 5 51.05	2.3878	27 28 39.4	2.548	6	8 54 21.31	2.1215	22 51 36.8	8.588
7	7 8 14.18	2.3833	27 26 2.0	2.698	7	8 56 28.42	2.1156	22 42 58.6	8.686
8	7 10 37.05	2.3788	27 23 15.6	2.848	8	8 58 35.18	2.1098	22 34 14.5	8.783
9	7 12 59.64	2.3742	27 20 20.2	2.997	9	9 0 41.60	2.1040	22 25 24.6	8.880
10	7 15 21.95	2.3695	27 17 16.0	3.143	10	9 2 47.66	2.0981	22 16 28.9	8.976
11	7 17 43.98	2.3647	27 14 3.1	3.288	11	9 4 53.37	2.0922	22 7 27.4	9.071
12	7 20 5.71	2.3598	27 10 41.5	3.433	12	9 6 58.72	2.0863	21 58 20.3	9.165
13	7 22 27.15	2.3549	27 7 11.2	3.578	13	9 9 3.72	2.0806	21 49 7.6	9.258
14	7 24 48.30	2.3500	27 3 32.2	3.722	14	9 11 8.38	2.0749	21 39 49.3	9.350
15	7 27 9.15	2.3450	26 59 44.6	3.864	15	9 13 12.71	2.0692	21 30 25.6	9.440
16	7 29 29.70	2.3399	26 55 48.5	4.005	16	9 15 16.69	2.0634	21 20 56.5	9.529
17	7 31 49.94	2.3348	26 51 44.0	4.144	17	9 17 20.32	2.0577	21 11 22.1	9.618
18	7 34 9.87	2.3296	26 47 31.2	4.283	18	9 19 23.61	2.0520	21 1 42.4	9.705
19	7 36 29.49	2.3243	26 43 10.1	4.422	19	9 21 26.56	2.0464	20 51 57.5	9.791
20	7 38 48.79	2.3189	26 38 40.6	4.560	20	9 23 29.18	2.0408	20 42 7.4	9.876
21	7 41 7.76	2.3135	26 34 2.9	4.697	21	9 25 31.46	2.0352	20 32 12.3	9.960
22	7 43 26.41	2.3081	26 29 17.0	4.832	22	9 27 33.41	2.0297	20 22 12.2	10.044
23	7 45 44.74	2.3027	N.26 24 23.1	4.964	23	9 29 35.03	2.0242	N.20 12 7.1	10.127
THURSDAY 26.					SATURDAY 28.				
0	7 48 2.74	2.2972	N.26 19 21.3	5.097	0	9 31 36.32	2.0187	N.20 1 57.0	10.208
1	7 50 20.41	2.2917	26 14 11.5	5.230	1	9 33 37.28	2.0133	19 51 42.1	10.288
2	7 52 37.74	2.2862	26 8 53.8	5.362	2	9 35 37.92	2.0079	19 41 22.5	10.366
3	7 54 54.74	2.2805	26 3 28.2	5.492	3	9 37 38.24	2.0026	19 30 58.2	10.444
4	7 57 11.40	2.2748	25 57 54.8	5.621	4	9 39 38.24	1.9973	19 20 29.2	10.521
5	7 59 27.72	2.2691	25 52 13.7	5.748	5	9 41 37.92	1.9920	19 9 55.6	10.597
6	8 1 43.69	2.2634	25 46 25.0	5.875	6	9 43 37.28	1.9868	18 59 17.5	10.673
7	8 3 59.32	2.2577	25 40 28 7	6.000	7	9 45 36.33	1.9816	18 48 34.9	10.747
8	8 6 14.60	2.2520	25 34 25.0	6.125	8	9 47 35.07	1.9765	18 37 47.9	10.819
9	8 8 29.54	2.2462	25 28 13.8	6.249	9	9 49 33.51	1.9714	18 26 56.6	10.891
10	8 10 44.14	2.2403	25 21 55.2	6.371	10	9 51 31.64	1.9663	18 16 1.0	10.962
11	8 12 58.38	2.2344	25 15 29.3	6.492	11	9 53 29.47	1.9612	18 5 1.1	11.033
12	8 15 12.26	2.2285	25 8 56.2	6.612	12	9 55 26.99	1.9562	17 53 57.0	11.103
13	8 17 25.79	2.2226	25 2 15.9	6.731	13	9 57 24.22	1.9514	17 42 48.8	11.170
14	8 19 38.97	2.2167	24 55 28.5	6.849	14	9 59 21.16	1.9466	17 31 36.6	11.237
15	8 21 51.80	2.2108	24 48 34.0	6.967	15	10 1 17.81	1.9417	17 20 20.4	11.303
16	8 24 4.27	2.2048	24 41 32.5	7.082	16	10 3 14.17	1.9369	17 9 0.3	11.368
17	8 26 16.38	2.1988	24 34 24.1	7.196	17	10 5 10.24	1.9322	16 57 36.3	11.433
18	8 28 28.13	2.1928	24 27 9.0	7.309	18	10 7 6.03	1.9275	16 46 8.4	11.496
19	8 30 39.52	2.1869	24 19 47.1	7.422	19	10 9 1.54	1.9228	16 34 36.8	11.558
20	8 32 50.56	2.1810	24 12 18.4	7.534	20	10 10 56.78	1.9182	16 23 1.5	11.619
21	8 35 1.25	2.1751	24 4 43.0	7.644	21	10 12 51.74	1.9137	16 11 22.5	11.680
22	8 37 11.58	2.1691	23 57 1.1	7.753	22	10 14 46.43	1.9093	15 59 39.9	11.739
23	8 39 21.55	2.1631	23 49 12.7	7.861	23	10 16 40.86	1.9049	15 47 53.8	11.798
24	8 41 31.15	2.1571	N.23 41 17.8	7.969	24	10 18 35.03	1.9006	N.15 36 4.2	11.855

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 18 35.03	1.9006	N.15 36 4.2	11.855
1	10 20 28.94	1.8963	15 24 11.2	11.912
2	10 22 22.59	1.8920	15 12 14.8	11.968
3	10 24 15.98	1.8878	15 0 15.0	12.024
4	10 26 9.12	1.8836	14 48 12.0	12.077
5	10 28 2.02	1.8795	14 36 5.8	12.130
6	10 29 54.67	1.8755	14 23 56.4	12.183
7	10 31 47.08	1.8715	14 11 43.9	12.234
8	10 33 39.26	1.8676	13 59 28.3	12.284
9	10 35 31.20	1.8638	13 47 9.8	12.333
10	10 37 22.91	1.8600	13 34 48.3	12.382
11	10 39 14.40	1.8562	13 22 23.9	12.430
12	10 41 5.66	1.8525	13 9 56.7	12.477
13	10 42 56.70	1.8489	12 57 26.7	12.523
14	10 44 47.53	1.8454	12 44 53.9	12.569
15	10 46 38.15	1.8419	12 32 18.4	12.614
16	10 48 28.56	1.8484	12 19 40.3	12.657
17	10 50 18.76	1.8349	12 6 59.6	12.699
18	10 52 8.75	1.8316	11 54 16.4	12.741
19	10 53 58.55	1.8283	11 41 30.7	12.782
20	10 55 48.16	1.8251	11 28 42.5	12.822
21	10 57 37.57	1.8220	11 15 52.0	12.862
22	10 59 26.80	1.8189	11 2 59.1	12.900
23	11 1 15.85	1.8159	N.10 50 3.9	12.937

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 3 4.71	1.8129	N.10 37 6.6	12.974
1	11 4 53.40	1.8100	10 24 7.1	13.011
2	11 6 41.92	1.8071	10 11 5.4	13.047
3	11 8 30.26	1.8043	9 58 1.5	13.082
4	11 10 18.44	1.8016	9 44 55.6	13.115
5	11 12 6.46	1.7990	9 31 47.7	13.147
6	11 13 54.33	1.7965	9 18 37.9	13.179
7	11 15 42.04	1.7939	9 5 26.2	13.211
8	11 17 29.60	1.7914	8 52 12.6	13.242
9	11 19 17.01	1.7890	8 38 57.2	13.272
10	11 21 4.28	1.7866	8 25 40.0	13.300
11	11 22 51.41	1.7843	8 12 21.1	13.327
12	11 24 38.40	1.7821	7 59 0.7	13.354
13	11 26 25.26	1.7800	7 45 38.6	13.381
14	11 28 12.00	1.7779	7 32 14.9	13.407
15	11 29 58.61	1.7758	7 18 49.7	13.433
16	11 31 45.10	1.7739	7 5 23.0	13.457
17	11 33 31.48	1.7720	6 51 54.9	13.480
18	11 35 17.74	1.7701	6 38 25.4	13.502
19	11 37 3.89	1.7683	6 24 54.6	13.524
20	11 38 49.94	1.7666	6 11 22.5	13.546
21	11 40 35.89	1.7650	5 57 49.1	13.567
22	11 42 21.74	1.7633	5 44 14.5	13.587
23	11 44 7.50	1.7617	5 30 38.7	13.605
24	11 45 53.16	1.7603	N. 5 17 1.9	13.623

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 45 53.16	1.7603	N. 5 17 1.9	13.623
1	11 47 38.74	1.7590	5 3 24.0	13.640
2	11 49 24.24	1.7577	4 49 45.1	13.657
3	11 51 9.66	1.7564	4 36 5.2	13.673
4	11 52 55.01	1.7551	4 22 24.4	13.688
5	11 54 40.29	1.7539	4 8 42.7	13.703
6	11 56 25.49	1.7528	3 55 0.1	13.717
7	11 58 10.63	1.7518	3 41 16.7	13.729
8	11 59 55.72	1.7509	3 27 32.6	13.740
9	12 1 40.75	1.7501	3 13 47.9	13.751
10	12 3 25.73	1.7493	3 0 2.5	13.762
11	12 5 10.67	1.7485	2 46 16.4	13.772
12	12 6 55.56	1.7478	2 32 29.8	13.781
13	12 8 40.41	1.7471	2 18 42.7	13.790
14	12 10 25.23	1.7465	2 4 55.1	13.798
15	12 12 10.01	1.7460	1 51 7.0	13.805
16	12 13 54.76	1.7456	1 37 18.5	13.811
17	12 15 39.49	1.7453	1 23 29.7	13.816
18	12 17 24.20	1.7450	1 9 40.6	13.821
19	12 19 8.89	1.7447	0 55 51.2	13.825
20	12 20 53.57	1.7445	0 42 1.6	13.827
21	12 22 38.24	1.7444	0 28 11.9	13.829
22	12 24 22.90	1.7443	0 14 22.1	13.831
23	12 26 7.56	1.7443	N. 0 0 32.2	13.833

WEDNESDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 27 52.22	1.7444	S. 0 13 17.8	13.833

PHASES OF THE MOON.

		d	h	m
○	Full Moon, . . .	2	17	21.6
☾	Last Quarter, . .	10	21	33.8
●	New Moon, . .	17	17	2.3
☽	First Quarter, . .	24	10	31.4

		d	h
☾	Apogee, ...	4	20.0
☾	Perigee, ...	17	23.3
☾	Apogee, ...	31	21.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Aldebaran	W.	74° 19′ 5″	3016	75° 48′ 58″	3020	77° 18′ 46″	3025	78° 48′ 28″	3030
	Pollux	W.	30 7 59	2978	31 38 39	2982	33 9 14	2987	34 39 43	2992
	Jupiter	E.	37 15 55	2932	35 44 17	2938	34 12 46	2944	32 41 23	2950
	Spica	E.	60 42 27	2980	59 11 49	2985	57 41 18	2991	56 10 54	2996
	Antares	E.	106 34 27	2973	105 3 40	2977	103 32 59	2983	102 2 25	2988
2	Aldebaran	W.	86 15 30	3052	87 44 38	3056	89 13 41	3060	90 42 39	3065
	Pollux	W.	42 10 44	3014	43 40 40	3018	45 10 30	3022	46 40 16	3026
	Spica	E.	48 40 33	3022	47 10 48	3028	45 41 10	3033	44 11 38	3038
	Antares	E.	94 31 7	3012	93 1 9	3016	91 31 16	3020	90 1 28	3024
3	Aldebaran	W.	98 6 12	3084	99 34 41	3088	101 3 5	3091	102 31 25	3095
	Pollux	W.	54 7 56	3043	55 37 15	3046	57 6 31	3049	58 35 43	3052
	Regulus	W.	18 2 53	3159	19 29 51	3148	20 57 3	3138	22 24 27	3130
	Spica	E.	36 45 26	3061	35 16 29	3066	33 47 38	3071	32 18 53	3077
	Antares	E.	82 33 41	3043	81 4 21	3046	79 35 5	3049	78 5 53	3052
4	Pollux	W.	66 0 54	3064	67 29 48	3066	68 58 39	3068	70 27 28	3069
	Regulus	W.	29 43 15	3110	31 11 13	3107	32 39 14	3106	34 7 16	3105
	Antares	E.	70 40 42	3065	69 11 49	3066	67 42 58	3069	66 14 10	3069
	α Aquilæ	E.	115 57 22	4136	114 47 55	4113	113 38 6	4091	112 27 56	4071
5	Pollux	W.	77 51 11	3074	79 19 52	3074	80 48 33	3074	82 17 14	3074
	Regulus	W.	41 27 50	3099	42 56 1	3098	44 24 13	3097	45 52 26	3096
	Antares	E.	58 50 32	3075	57 21 52	3076	55 53 13	3076	54 24 34	3076
	α Aquilæ	E.	106 32 36	3990	105 20 47	3978	104 8 46	3966	102 56 33	3956
	Saturn	E.	120 5 12	3129	118 37 37	3129	117 10 2	3129	115 42 27	3128
6	Pollux	W.	89 40 47	3070	91 9 33	3068	92 38 22	3066	94 7 13	3064
	Regulus	W.	53 14 1	3087	54 42 27	3084	56 10 56	3082	57 39 28	3079
	Jupiter	W.	23 0 52	3033	24 30 24	3030	25 59 59	3028	27 29 37	3025
	Antares	E.	47 1 13	3073	45 32 30	3071	44 3 45	3069	42 34 58	3067
	α Aquilæ	E.	96 53 6	3915	95 40 1	3909	94 26 50	3904	93 13 34	3900
	Saturn	E.	108 24 15	3122	106 56 32	3119	105 28 46	3118	104 0 58	3114
7	Pollux	W.	101 32 16	3048	103 1 29	3044	104 30 47	3039	106 0 11	3035
	Regulus	W.	65 3 4	3061	66 32 1	3056	68 1 4	3052	69 30 12	3047
	Jupiter	W.	34 58 50	3006	36 28 55	3001	37 59 6	2997	39 29 23	2992
	Antares	E.	35 10 19	3053	33 41 12	3050	32 12 1	3046	30 42 45	3043
	α Aquilæ	E.	87 6 18	3885	85 52 43	3885	84 39 8	3885	83 25 33	3885
	Saturn	E.	96 41 3	3098	95 12 51	3094	93 44 34	3090	92 16 12	3085
	Sun	E.	133 38 22	3448	132 17 0	3442	130 55 31	3437	129 33 56	3431
8	Regulus	W.	76 57 36	3017	78 27 28	3009	79 57 29	3001	81 27 40	2994
	Jupiter	W.	47 2 29	2962	48 33 30	2954	50 4 40	2947	51 35 59	2939
	Spica	W.	22 58 35	3049	24 27 47	3037	25 57 14	3026	27 26 55	3015
	α Aquilæ	E.	77 17 56	3898	76 4 34	3903	74 51 17	3908	73 38 5	3915
	Saturn	E.	84 52 42	3055	83 23 37	3047	81 54 23	3041	80 25 1	3033
	Sun	E.	122 44 11	3395	121 21 49	3387	119 59 18	3379	118 36 37	3370
9	Regulus	W.	89 1 8	2950	90 32 24	2939	92 3 53	2929	93 35 35	2918
	Jupiter	W.	59 15 13	2895	60 47 38	2884	62 20 17	2874	63 53 9	2863
	Spica	W.	34 58 46	2958	36 29 51	2947	38 1 10	2935	39 32 44	2924
	α Aquilæ	E.	67 34 11	3966	66 21 58	3981	65 10 0	3997	63 58 17	4015
	Saturn	E.	72 55 37	2989	71 25 10	2979	69 54 31	2969	68 23 39	2958

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Aldebaran	W.	80° 18′ 4″	3034	81° 47′ 34″	3039	83° 16′ 58″	3043	84° 46′ 17″	3048
	Pollux	W.	36 10 6	2996	37 40 24	3001	39 10 36	3005	40 40 43	3009
	Jupiter	E.	31 10 7	2955	29 38 58	2960	28 7 55	2965	26 36 59	2971
	Spica	E.	54 40 36	3001	53 10 25	3007	51 40 21	3013	50 10 24	3018
	Antares	E.	100 31 57	2993	99 1 35	2998	97 31 20	3003	96 1 11	3007
2	Aldebaran	W.	92 11 31	3069	93 40 18	3073	95 9 1	3077	96 37 39	3081
	Pollux	W.	48 9 57	3030	49 39 33	3033	51 9 5	3036	52 38 33	3040
	Spica	E.	42 42 12	3043	41 12 52	3047	39 43 38	3052	38 14 29	3056
	Antares	E.	88 31 45	3028	87 2 7	3032	85 32 34	3035	84 3 5	3039
3	Aldebaran	W.	103 59 41	3098	105 27 53	3102	106 56 0	3105	108 24 3	3108
	Pollux	W.	60 4 51	3055	61 33 56	3057	63 2 58	3060	64 31 57	3061
	Regulus	W.	23 52 0	3124	25 19 41	3119	26 47 28	3114	28 15 20	3112
	Spica	E.	30 50 15	3082	29 21 43	3087	27 53 18	3092	26 24 59	3099
	Antares	E.	76 36 44	3055	75 7 39	3057	73 38 37	3060	72 9 38	3062
4	Pollux	W.	71 56 16	3070	73 25 2	3072	74 53 46	3073	76 22 29	3073
	Regulus	W.	35 35 20	3104	37 3 25	3102	38 31 32	3101	39 59 40	3100
	Antares	E.	64 45 23	3071	63 16 38	3073	61 47 55	3073	60 19 13	3074
	α Aquilæ	E.	111 17 26	4052	110 6 38	4035	108 55 33	4019	107 44 12	4004
5	Pollux	W.	83 45 55	3073	85 14 37	3073	86 43 19	3073	88 12 2	3071
	Regulus	W.	47 20 41	3094	48 48 58	3092	50 17 17	3091	51 45 38	3089
	Antares	E.	52 55 55	3076	51 27 16	3075	49 58 36	3074	48 29 55	3073
	α Aquilæ	E.	101 44 10	3946	100 31 37	3937	99 18 55	3928	98 6 4	3921
	Saturn	E.	114 14 51	3127	112 47 14	3126	111 19 36	3124	109 51 56	3124
6	Pollux	W.	95 36 7	3061	97 5 4	3059	98 34 4	3056	100 3 8	3052
	Regulus	W.	59 8 3	3076	60 36 42	3073	62 5 25	3069	63 34 12	3065
	Jupiter	W.	28 59 19	3022	30 29 5	3018	31 58 55	3014	33 28 50	3010
	Antares	E.	41 6 8	3065	39 37 15	3063	38 8 20	3060	36 39 22	3056
	α Aquilæ	E.	92 0 14	3896	90 46 50	3892	89 33 22	3889	88 19 51	3887
	Saturn	E.	102 33 6	3112	101 5 11	3110	99 37 13	3105	98 9 10	3102
7	Pollux	W.	107 29 40	3030	108 59 15	3024	110 28 58	3018	111 58 48	3012
	Regulus	W.	70 59 27	3042	72 28 48	3036	73 58 16	3030	75 27 52	3023
	Jupiter	W.	40 59 46	2986	42 30 16	2981	44 0 52	2975	45 31 36	2968
	Antares	E.	29 13 25	3038	27 43 59	3034	26 14 28	3029	24 44 51	3024
	α Aquilæ	E.	82 11 58	3886	80 58 24	3888	79 44 52	3890	78 31 22	3894
	Saturn	E.	90 47 44	3080	89 19 10	3073	87 50 28	3068	86 21 39	3061
	Sun	E.	128 12 14	3424	126 50 25	3418	125 28 29	3410	124 6 24	3403
8	Regulus	W.	82 58 0	2985	84 28 31	2977	85 59 12	2969	87 30 4	2959
	Jupiter	W.	53 7 28	2931	54 39 7	2922	56 10 58	2913	57 43 0	2905
	Spica	W.	28 56 49	3004	30 26 57	2993	31 57 19	2981	33 27 55	2969
	α Aquilæ	E.	72 25 0	3922	71 12 3	3931	69 59 15	3941	68 46 37	3953
	Saturn	E.	78 55 29	3025	77 25 47	3017	75 55 55	3008	74 25 52	2998
	Sun	E.	117 13 46	3361	115 50 45	3351	114 27 32	3341	113 4 8	3330
9	Regulus	W.	95 7 31	2907	96 39 41	2895	98 12 6	2883	99 44 46	2871
	Jupiter	W.	65 26 15	2852	66 59 35	2841	68 33 10	2828	70 7 1	2816
	Spica	W.	41 4 33	2911	42 36 38	2898	44 8 59	2886	45 41 36	2872
	α Aquilæ	E.	62 46 52	4035	61 35 47	4058	60 25 4	4082	59 14 45	4111
	Saturn	E.	66 52 33	2946	65 21 13	2935	63 49 39	2924	62 17 51	2912

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
9	Sun	E.	111° 40′ 31″	3319	110° 16′ 42″	3308	108° 52′ 40″	3297	107° 28′ 25″	3284
10	Regulus	W.	101 17 42	2859	102 50 54	2845	104 24 23	2832	105 58 9	2819
	Jupiter	W.	71 41 8	2803	73 15 32	2790	74 50 13	2777	76 25 11	2763
	Spica	W.	47 14 31	2859	48 47 43	2845	50 21 12	2831	51 54 59	2817
	α Aquilæ	E.	58 4 54	4142	56 55 33	4176	55 46 44	4214	54 38 31	4258
	Saturn	E.	60 45 48	2900	59 13 29	2887	57 40 53	2874	56 8 1	2860
	Sun	E.	100 23 25	3218	98 57 37	3204	97 31 32	3188	96 5 9	3173
11	Jupiter	W.	84 24 43	2689	86 1 38	2674	87 38 53	2657	89 16 30	2640
	Spica	W.	59 48 46	2740	61 24 33	2724	63 0 41	2707	64 37 11	2690
	Saturn	E.	48 19 14	2790	46 44 33	2775	45 9 33	2761	43 34 14	2746
	α Aquilæ	E.	49 8 52	4552	48 5 46	4633	47 3 50	4723	46 3 10	4825
	Sun	E.	88 48 32	3091	87 20 12	3075	85 51 32	3056	84 22 29	3039
12	Jupiter	W.	97 30 18	2555	99 10 15	2538	100 50 36	2520	102 31 22	2501
	Spica	W.	72 45 26	2603	74 24 17	2585	76 3 32	2566	77 43 13	2548
	Antares	W.	26 51 31	2606	28 30 18	2587	30 9 31	2568	31 49 10	2549
	Saturn	E.	35 32 39	2672	33 55 21	2657	32 17 43	2643	30 39 47	2630
	Sun	E.	76 51 34	2945	75 20 12	2926	73 48 26	2906	72 16 15	2887
13	Jupiter	W.	111 1 39	2409	112 45 1	2390	114 28 50	2372	116 13 5	2353
	Spica	W.	86 8 2	2455	87 50 19	2436	89 33 2	2417	91 16 12	2398
	Antares	W.	40 14 5	2453	41 56 25	2433	43 39 12	2415	45 22 26	2396
	Sun	E.	64 28 57	2786	62 54 11	2766	61 18 58	2746	59 43 19	2725
14	Spica	W.	99 58 48	2306	101 44 39	2287	103 30 57	2270	105 17 41	2252
	Antares	W.	54 5 26	2301	55 51 24	2283	57 37 48	2265	59 24 39	2247
	Sun	E.	51 38 25	2628	50 0 8	2609	48 21 25	2590	46 42 16	2572
15	Antares	W.	68 25 21	2163	70 14 44	2147	72 4 31	2133	73 54 40	2118
	Sun	E.	38 20 23	2487	36 38 52	2472	34 56 59	2457	33 14 45	2443
19	Sun	W.	18 26 4	2346	20 10 57	2347	21 55 48	2348	23 40 38	2351
	Aldebaran	E.	50 57 31	2068	49 5 42	2079	47 14 11	2092	45 22 59	2107
	Pollux	E.	94 33 12	1993	92 39 26	2000	90 45 51	2008	88 52 29	2017
20	Sun	W.	32 22 53	2391	34 6 41	2401	35 50 14	2412	37 33 31	2425
	Aldebaran	E.	36 13 23	2204	34 25 2	2231	32 37 20	2260	30 50 21	2292
	Pollux	E.	79 29 24	2070	77 37 38	2082	75 46 11	2095	73 55 4	2109
	Regulus	E.	115 58 45	2083	114 7 20	2096	112 16 14	2108	110 25 27	2121
21	Sun	W.	46 4 59	2500	47 46 12	2517	49 27 2	2534	51 7 28	2551
	Mars	W.	16 50 39	2408	18 34 2	2424	20 17 3	2441	21 59 40	2458
	Pollux	E.	64 44 57	2183	62 56 4	2200	61 7 36	2216	59 19 32	2233
	Regulus	E.	101 16 47	2194	99 28 10	2210	97 39 58	2227	95 52 10	2243
22	Sun	W.	59 23 34	2642	61 1 32	2660	62 39 5	2679	64 16 13	2698
	Mars	W.	30 26 33	2548	32 6 39	2566	33 46 20	2585	35 25 35	2604
	Pollux	E.	50 25 31	2320	48 40 0	2337	46 54 55	2355	45 10 16	2373
	Regulus	E.	86 59 23	2329	85 14 6	2347	83 29 15	2365	81 44 50	2383
	Jupiter	E.	115 4 7	2280	113 17 38	2298	111 31 35	2315	109 45 57	2333
23	Sun	W.	72 15 32	2794	73 50 8	2812	75 24 20	2831	76 58 7	2851
	Mars	W.	43 35 26	2698	45 12 8	2718	46 48 24	2736	48 24 16	2755

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Sun	E.	106° 3′ 55″	3272	104° 39′ 11″	3259	103° 14′ 11″	3246	101° 48′ 56″	3232
10	Regulus	W.	107 32 12	2805	109 6 34	2791	110 41 15	2775	112 16 15	2761
	Jupiter	W.	78 0 27	2749	79 36 2	2735	81 11 56	2720	82 48 9	2704
	Spica	W.	53 29 5	2802	55 3 30	2787	56 38 15	2772	58 13 20	2756
	α Aquilæ	E.	53 30 59	4305	52 24 11	4356	51 18 10	4415	50 13 2	4480
	Saturn	E.	54 34 51	2847	53 1 24	2833	51 27 39	2819	49 53 36	2805
	Sun	E.	94 38 28	3158	93 11 29	3142	91 44 10	3125	90 16 31	3109
11	Jupiter	W.	90 54 30	2624	92 32 52	2607	94 11 37	2590	95 50 46	2573
	Spica	W.	66 14 4	2674	67 51 19	2656	69 28 58	2639	71 7 0	2621
	Saturn	E.	41 58 35	2731	40 22 36	2716	38 46 17	2701	37 9 38	2686
	α Aquilæ	E.	45 3 54	4938	44 6 10	5067	43 10 7	5209	42 15 52	5368
	Sun	E.	82 53 4	3020	81 23 16	3002	79 53 6	2983	78 22 32	2964
12	Regulus	W.	104 12 34	2483	105 54 11	2465	107 36 14	2446	109 18 43	2427
	Jupiter	W.	79 23 19	2530	81 3 51	2512	82 44 48	2492	84 26 12	2474
	Antares	W.	33 29 15	2530	35 9 47	2510	36 50 46	2491	38 32 12	2472
	Saturn	E.	29 1 33	2618	27 23 2	2607	25 44 16	2596	24 5 16	2588
	Sun	E.	70 43 39	2866	69 10 37	2847	67 37 10	2827	66 3 17	2806
13	Jupiter	W.	117 57 47	2335	119 42 56	2316	121 28 32	2298	123 14 35	2279
	Spica	W.	92 59 50	2379	94 43 55	2361	96 28 26	2342	98 13 24	2324
	Antares	W.	47 6 7	2376	48 50 16	2357	50 34 52	2339	52 19 55	2320
	Sun	E.	58 7 13	2706	56 30 41	2686	54 53 42	2666	53 16 17	2646
14	Spica	W.	107 4 51	2235	108 52 26	2218	110 40 27	2202	112 28 52	2185
	Antares	W.	61 11 56	2230	62 59 39	2212	64 47 48	2196	66 36 22	2179
	Sun	E.	45 2 42	2553	43 22 43	2536	41 42 20	2519	40 1 33	2502
15	Antares	W.	75 45 12	2103	77 36 6	2090	79 27 20	2077	81 18 54	2064
	Sun	E.	31 32 11	2429	29 49 17	2417	28 6 6	2407	26 22 41	2399
19	Sun	W.	25 25 23	2355	27 10 3	2362	28 54 33	2371	30 38 50	2380
	Aldebaran	E.	43 32 10	2122	41 41 45	2140	39 51 47	2160	38 2 19	2181
	Pollux	E.	86 59 21	2026	85 6 28	2036	83 13 50	2046	81 21 28	2058
20	Sun	W.	39 16 30	2439	40 59 9	2454	42 41 27	2469	44 23 24	2485
	Aldebaran	E.	29 4 10	2329	27 18 53	2372	25 34 38	2420	23 51 32	2475
	Pollux	E.	72 4 19	2123	70 13 55	2137	68 23 53	2153	66 34 14	2167
	Regulus	E.	108 35 0	2135	106 44 54	2149	104 55 9	2164	103 5 47	2178
21	Sun	W.	52 47 30	2569	54 27 8	2586	56 6 22	2604	57 45 11	2624
	Mars	W.	23 41 52	2475	25 23 40	2493	27 5 3	2511	28 46 1	2530
	Pollux	E.	57 31 53	2249	55 44 39	2267	53 57 51	2284	52 11 28	2302
	Regulus	E.	94 4 46	2260	92 17 47	2277	90 31 14	2294	88 45 6	2311
22	Sun	W.	65 52 56	2717	67 29 13	2737	69 5 4	2755	70 40 31	2775
	Mars	W.	37 4 25	2623	38 42 49	2642	40 20 47	2661	41 58 19	2680
	Pollux	E.	43 26 3	2392	41 42 17	2410	39 58 57	2429	38 16 3	2447
	Regulus	E.	80 0 51	2401	78 17 18	2419	76 34 11	2438	74 51 30	2455
	Jupiter	E.	108 0 45	2350	106 15 59	2368	104 31 38	2386	102 47 43	2404
23	Sun	W.	78 31 29	2869	80 4 27	2888	81 37 1	2906	83 9 12	2925
	Mars	W.	49 59 43	2773	51 34 46	2792	53 9 25	2809	54 43 41	2828

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Pollux	E.	36° 33′ 35″	2465	34° 51′ 33″	2483	33° 9′ 56″	2502	31° 28′ 45″	2520
	Regulus	E.	73 9 14	2474	71 27 24	2492	69 46 0	2510	68 5 1	2528
	Jupiter	E.	101 4 14	2422	99 21 10	2439	97 38 31	2457	95 56 17	2475
24	Sun	W.	84 40 59	2942	86 12 24	2961	87 43 26	2978	89 14 6	2995
	Mars	W.	56 17 33	2845	57 51 2	2862	59 24 9	2880	60 56 53	2897
	Aldebaran	W.	22 27 51	2903	24 0 6	2884	25 32 45	2871	27 5 41	2862
	Regulus	E.	59 46 17	2616	58 7 44	2634	56 29 35	2651	54 51 49	2667
	Jupiter	E.	87 31 11	2559	85 51 20	2576	84 11 52	2592	82 32 46	2609
	Spica	E.	113 48 27	2608	112 9 43	2624	110 31 21	2640	108 53 21	2656
25	Sun	W.	96 42 11	3078	98 10 47	3093	99 39 5	3109	101 7 4	3124
	Mars	W.	68 35 17	2978	70 5 57	2993	71 36 18	3008	73 6 21	3023
	Aldebaran	W.	34 51 57	2859	36 25 8	2864	37 58 13	2869	39 31 11	2876
	Regulus	E.	46 48 33	2750	45 12 59	2765	43 37 45	2781	42 2 52	2797
	Jupiter	E.	74 22 39	2684	72 45 38	2699	71 8 57	2713	69 32 35	2727
	Spica	E.	100 48 35	2732	99 12 38	2747	97 37 0	2761	96 1 41	2775
26	Sun	W.	108 22 36	3193	109 48 53	3206	111 14 55	3219	112 40 42	3231
	Mars	W.	80 32 10	3091	82 0 31	3104	83 28 36	3115	84 56 27	3128
	Aldebaran	W.	47 13 48	2913	48 45 50	2921	50 17 42	2930	51 49 23	2938
	Regulus	E.	34 13 31	2873	32 40 38	2889	31 8 5	2905	29 35 53	2921
	Jupiter	E.	61 35 8	2791	60 0 28	2803	58 26 4	2815	56 51 55	2826
	Spica	E.	88 9 27	2839	86 35 50	2851	85 2 28	2862	83 29 21	2873
27	Sun	W.	119 46 10	3287	121 10 37	3296	122 34 53	3306	123 58 58	3315
	Mars	W.	92 12 14	3182	93 38 45	3191	95 5 5	3200	96 31 14	3209
	Aldebaran	W.	59 25 17	2977	60 55 59	2985	62 26 31	2992	63 56 54	2998
	Pollux	W.	15 4 30	2940	16 35 58	2946	18 7 19	2952	19 38 32	2958
	Jupiter	E.	49 4 40	2877	47 31 52	2886	45 59 15	2895	44 26 50	2905
	Spica	E.	75 47 12	2924	74 15 24	2934	72 43 48	2943	71 12 24	2952
28	Mars	W.	103 39 26	3249	105 4 37	3256	106 29 40	3263	107 54 35	3270
	Aldebaran	W.	71 26 46	3030	72 56 21	3036	74 25 49	3042	75 55 10	3047
	Pollux	W.	27 12 39	2989	28 43 5	2995	30 13 24	3001	31 43 36	3006
	Jupiter	E.	36 47 26	2943	35 16 2	2950	33 44 47	2958	32 13 41	2964
	Spica	E.	63 37 59	2990	62 7 34	2997	60 37 18	3004	59 7 10	3009
	Antares	E.	109 30 7	2984	107 59 34	2990	106 29 9	2997	104 58 52	3002
29	Aldebaran	W.	83 20 18	3072	84 49 2	3075	86 17 42	3079	87 46 17	3083
	Pollux	W.	39 13 0	3030	40 42 36	3034	42 12 6	3039	43 41 31	3042
	Jupiter	E.	24 40 11	2995	23 9 52	3001	21 39 41	3007	20 9 37	3014
	Spica	E.	51 38 19	3038	50 8 53	3043	48 39 33	3047	47 10 19	3052
	Antares	E.	97 29 9	3028	95 59 31	3032	94 29 58	3037	93 0 31	3040
30	Aldebaran	W.	95 8 7	3099	96 36 18	3102	98 4 25	3105	99 32 29	3106
	Pollux	W.	51 7 38	3056	52 36 41	3059	54 5 41	3060	55 34 39	3063
	Regulus	W.	15 9 40	3228	16 35 16	3204	18 1 20	3185	19 27 47	3169
	Spica	E.	39 45 26	3072	38 16 42	3075	36 48 2	3078	35 19 26	3082
	Antares	E.	85 34 18	3056	84 5 14	3058	82 36 13	3060	81 7 15	3062
31	Pollux	W.	62 58 57	3069	64 27 44	3070	65 56 30	3070	67 25 16	3071
	Regulus	W.	26 43 37	3127	28 11 14	3123	29 38 56	3119	31 6 43	3115
	Spica	E.	27 57 35	3101	26 29 27	3105	25 1 24	3111	23 33 28	3117
	Antares	E.	73 42 56	3069	72 14 9	3070	70 45 23	3071	69 16 38	3072

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Pollux	E.	29° 48′ 0″	2538	28° 7′ 40″	2556	26° 27′ 45″	2575	24° 48′ 16″	2593
	Regulus	E.	66 24 27	2546	64 44 18	2564	63 4 34	2582	61 25 14	2599
	Jupiter	E.	94 14 28	2492	92 33 3	2509	90 52 2	2526	89 11 25	2543
24	Sun	W.	90 44 25	3013	92 14 22	3029	93 43 59	3046	95 13 15	3062
	Mars	W.	62 29 16	2914	64 1 17	2931	65 32 57	2946	67 4 17	2962
	Aldebaran	W.	28 38 49	2856	30 12 4	2853	31 45 23	2854	33 18 41	2855
	Regulus	E.	53 14 25	2684	51 37 24	2701	50 0 45	2717	48 24 28	2734
	Jupiter	E.	80 54 3	2624	79 15 41	2640	77 37 40	2655	75 59 59	2670
	Spica	E.	107 15 42	2672	105 38 24	2688	104 1 28	2703	102 24 52	2717
25	Sun	W.	102 34 45	3138	104 2 8	3153	105 29 14	3167	106 56 3	3180
	Mars	W.	74 36 5	3038	76 5 31	3052	77 34 40	3065	79 3 33	3078
	Aldebaran	W.	41 4 1	2883	42 36 42	2890	44 9 14	2898	45 41 36	2905
	Regulus	E.	40 28 20	2812	38 54 8	2828	37 20 16	2843	35 46 44	2858
	Jupiter	E.	67 56 31	2741	66 20 45	2753	64 45 16	2766	63 10 4	2779
	Spica	E.	94 26 40	2788	92 51 56	2801	91 17 30	2814	89 43 20	2827
26	Sun	W.	114 6 14	3242	115 31 33	3254	116 56 38	3265	118 21 30	3276
	Mars	W.	86 24 3	3139	87 51 25	3150	89 18 34	3161	90 45 30	3171
	Aldebaran	W	53 20 54	2946	54 52 15	2954	56 23 25	2962	57 54 26	2969
	Regulus	E.	28 4 1	2938	26 32 30	2956	25 1 22	2974	23 30 37	2993
	Jupiter	E.	55 18 1	2837	53 44 21	2847	52 10 54	2857	50 37 40	2868
	Spica	E.	81 56 28	2884	80 23 49	2895	78 51 24	2905	77 19 12	2915
27	Sun	W.	125 22 52	3325	126 46 35	3332	128 10 9	3341	129 33 33	3349
	Mars	W.	97 57 12	3218	99 23 0	3226	100 48 38	3234	102 14 7	3242
	Aldebaran	W.	65 27 9	3005	66 57 15	3012	68 27 13	3018	69 57 3	3024
	Pollux	W.	21 9 37	2965	22 40 34	2971	24 11 23	2977	25 42 5	2983
	Jupiter	E.	42 54 37	2913	41 22 35	2920	39 50 42	2928	38 18 59	2936
	Spica	E.	69 41 11	2960	68 10 8	2969	66 39 16	2976	65 8 33	2983
28	Mars	W.	109 19 22	3276	110 44 2	3282	112 8 35	3286	113 33 3	3291
	Aldebaran	W.	77 24 24	3052	78 53 32	3058	80 22 33	3063	81 51 28	3067
	Pollux	W.	33 13 41	3012	34 43 39	3017	36 13 31	3021	37 43 18	3025
	Jupiter	E.	30 42 43	2971	29 11 54	2977	27 41 12	2983	26 10 38	2989
	Spica	E.	57 37 9	3016	56 7 16	3022	54 37 30	3027	53 7 51	3033
	Antares	E.	103 28 42	3008	101 58 39	3014	100 28 43	3018	98 58 53	3023
29	Aldebaran	W.	89 14 47	3087	90 43 13	3090	92 11 35	3093	93 39 53	3096
	Pollux	W.	45 10 52	3045	46 40 9	3048	48 9 22	3051	49 38 32	3054
	Jupiter	E.	18 39 42	3022	17 9 56	3030	15 40 20	3039	14 10 55	3047
	Spica	E.	45 41 10	3056	44 12 6	3060	42 43 8	3065	41 14 15	3068
	Antares	E.	91 31 8	3043	90 1 49	3047	88 32 35	3051	87 3 25	3053
30	Aldebaran	W.	101 0 31	3109	102 28 30	3111	103 56 26	3113	105 24 20	3115
	Pollux	W.	57 3 34	3065	58 32 27	3065	60 1 19	3067	61 30 9	3069
	Regulus	W.	20 54 33	3157	22 21 34	3148	23 48 46	3140	25 16 7	3133
	Spica	E.	33 50 55	3086	32 22 28	3090	30 54 6	3093	29 25 48	3097
	Antares	E.	79 38 19	3064	78 9 25	3065	76 40 33	3068	75 11 44	3069
31	Pollux	W.	68 54 1	3072	70 22 45	3071	71 51 30	3071	73 20 15	3071
	Regulus	W.	32 34 34	3112	34 2 29	3109	35 30 28	3106	36 58 30	3103
	Spica	E.	22 5 39	3124	20 37 59	3132	19 10 28	3142	17 43 9	3152
	Antares	E.	67 47 54	3072	66 19 10	3072	64 50 26	3072	63 21 42	3071

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	0 42 38.33	9.093	N. 4 35 21.3	+57.80	16 2.05	64.50	3 55.67	0.760
Thur.	2	0 46 16.65	9.099	4 58 25.7	57.58	16 1.77	64.52	3 37.47	0.755
Frid.	3	0 49 55.09	9.105	5 21 25.0	57.35	16 1.49	64.54	3 19.41	0.749
Sat.	4	0 53 33.69	9.112	5 44 18.6	57.12	16 1.21	64.56	3 1.51	0.743
Sun.	5	0 57 12.46	9.119	6 7 6.4	56.86	16 0.93	64.59	2 43.78	0.735
Mon.	6	1 0 51.43	9.128	6 29 47.8	56.59	16 0.65	64.62	2 26.24	0.726
Tues.	7	1 4 30.62	9.138	6 52 22.7	56.31	16 0.37	64.65	2 8.92	0.716
Wed.	8	1 8 10.05	9.148	7 14 50.8	56.02	16 0.09	64.68	1 51.84	0.706
Thur.	9	1 11 49.74	9.158	7 37 11.7	55.71	15 59.81	64.72	1 35.02	0.696
Frid.	10	1 15 29.70	9.170	7 59 25.0	55.39	15 59.53	64.76	1 18.47	0.684
Sat.	11	1 19 9.94	9.183	8 21 30.3	55.05	15 59.25	64.80	1 2.20	0.671
Sun.	12	1 22 50.49	9.196	8 43 27.4	54.71	15 58.98	64.84	0 46.24	0.658
Mon.	13	1 26 31.37	9.210	9 5 16.0	54.34	15 58.70	64.89	0 30.61	0.644
Tues.	14	1 30 12.59	9.224	9 26 55.7	53.96	15 58.43	64.94	0 15.33	0.630
Wed.	15	1 33 54.14	9.239	9 48 26.1	53.56	15 58.16	64.99	0 0.37	0.615
Thur.	16	1 37 36.04	9.254	10 9 46.6	53.15	15 57.89	65.04	0 14.25	0.600
Frid.	17	1 41 18.32	9.271	10 30 57.3	52.72	15 57.63	65.10	0 28.48	0.584
Sat.	18	1 45 0.99	9.287	10 51 57.4	52.29	15 57.37	65.16	0 42.32	0.568
Sun.	19	1 48 44.06	9.302	11 12 46.9	51.83	15 57.11	65.22	0 55.77	0.553
Mon.	20	1 52 27.53	9.319	11 33 25.3	51.35	15 56.86	65.28	1 8.83	0.536
Tues.	21	1 56 11.40	9.337	11 53 52.1	50.87	15 56.61	65.34	1 21.47	0.518
Wed.	22	15 9 55.70	9.355	12 14 7.0	50.37	15 56.36	65.41	1 33.69	0.500
Thur.	23	2 3 40.44	9.374	12 34 9.9	49.85	15 56.11	65.48	1 45.49	0.481
Frid.	24	2 7 25.62	9.393	12 54 0.4	49.33	15 55.87	65.55	1 56.83	0.462
Sat.	25	2 11 11.26	9.412	13 13 38.0	48.79	15 55.62	65.62	2 7.71	0.443
Sun.	26	2 14 57.37	9.432	13 33 2.5	48.24	15 55.38	65.69	2 18.12	0.423
Mon.	27	2 18 43.97	9.452	13 52 13.6	47.68	15 55.14	65.76	2 28.05	0.403
Tues.	28	2 22 31.06	9.473	14 11 11.0	47.11	15 54.90	65.84	2 37.49	0.382
Wed.	29	2 26 18.65	9.493	14 29 54.2	46.51	15 54.66	65.91	2 46.43	0.362
Thur.	30	2 30 6.75	9.515	14 48 23.1	45.91	15 54.42	65.99	2 54.86	0.340
Frid.	31	2 33 55.39	9.537	N.15 6 37.5	+45.29	15 54.18	66.06	3 2.77	0.318

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time. + prefixed to the hourly change of declination, indicates that north declinations are increasing, and south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S . Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be subtracted from / added to Mean Time.	Diff. for 1 hour.	Sidereal Time or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	0 42 37.72	9.096	N. 4 35 17.4	+57.81	3 55.72	0.760	0 38 42.00
Thur.	2	0 46 16.08	9.101	4 58 22.1	57.59	3 37.52	0.755	0 42 38.56
Frid.	3	0 49 54.57	9.107	5 21 21.6	57.36	3 19.46	0.749	0 46 35.11
Sat.	4	0 53 33.21	9.113	5 44 15.6	57.13	3 1.55	0.743	0 50 31.66
Sun.	5	0 57 12.03	9.121	6 7 3.6	56.87	2 43.82	0.735	0 54 28.21
Mon.	6	1 0 51.04	9.130	6 29 45.4	56.60	2 26.27	0.726	0 58 24.77
Tues.	7	1 4 30.27	9.140	6 52 20.6	56.32	2 8.95	0.716	1 2 21.32
Wed.	8	1 8 9.75	9.150	7 14 49.0	56.03	1 51.87	0.706	1 6 17.88
Thur.	9	1 11 49.48	9.160	7 37 10.1	55.72	1 35.05	0.696	1 10 14.43
Frid.	10	1 15 29.48	9.172	7 59 23.6	55.40	1 18.49	0.684	1 14 10.99
Sat.	11	1 19 9.76	9.185	8 21 29.2	55.06	1 2.22	0.671	1 18 7.54
Sun.	12	1 22 50.35	9.198	8 43 26.6	54.72	0 46.25	0.658	1 22 4.10
Mon.	13	1 26 31.27	9.212	9 5 15.5	54.35	0 30.62	0.644	1 26 0.65
Tues.	14	1 30 12.53	9.226	9 26 55.4	53.97	0 15.33	0.630	1 29 57.20
Wed.	15	1 33 54.12	9.241	9 48 26.0	53.57	0 0.37	0.615	1 33 53.75
Thur.	16	1 37 36.06	9.256	10 9 46.8	53.16	0 14.25	0.600	1 37 50.31
Frid.	17	1 41 18.38	9.272	10 30 57.6	52.73	0 28.48	0.584	1 41 46.86
Sat.	18	1 45 1.09	9.288	10 51 57.9	52.30	0 42.33	0.568	1 45 43.42
Sun.	19	1 48 44.19	9.303	11 12 47.6	51.84	0 55.78	0.553	1 49 39.97
Mon.	20	1 52 27.69	9.320	11 33 26.2	51.36	1 8.84	0.536	1 53 36.53
Tues.	21	1 56 11.60	9.338	11 53 53.1	50.88	1 21.48	0.518	1 57 33.08
Wed.	22	1 59 55.93	9.356	12 14 8.2	50.38	1 33.71	0.500	2 1 29.64
Thur.	23	2 3 40.69	9.375	12 34 11.3	49.86	1 45.50	0.481	2 5 26.19
Frid.	24	2 7 25.91	9.394	12 54 1.9	49.34	1 56.84	0.462	2 9 22.75
Sat.	25	2 11 11.58	9.413	13 13 39.6	48.80	2 7.72	0.443	2 13 19.30
Sun.	26	2 14 57.72	9.433	13 33 4.3	48.25	2 18.14	0.423	2 17 15.86
Mon.	27	2 18 44.34	9.453	13 52 15.6	47.68	2 28.07	0.403	2 21 12.41
Tues.	28	2 22 31.46	9.474	14 11 13.0	47.11	2 37.51	0.382	2 25 8.97
Wed.	29	2 26 19.08	9.494	14 29 56.3	46.51	2 46.44	0.362	2 29 5.52
Thur.	30	2 30 7.20	9.516	14 48 25.3	45.91	2 54.88	0.340	2 33 2.08
Frid.	31	2 33 55.85	9.538	N.15 6 39.8	+45.29	3 2.79	0.318	2 36 58.64

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	THE SUN'S Diff. for 1 hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	91	11 35 52.8	35 51.1	147.77	+0.31	9.9999792	+52.0	23 17 28.42
2	92	12 34 58.4	34 56.6	147.69	0.19	0.0001044	52.2	23 13 32.51
3	93	13 34 2.0	34 0.1	147.61	+0.05	.0002300	52.4	23 9 36.59
4	94	14 33 3.6	33 1.6	147.53	−0.09	.0003562	52.6	23 5 40.69
5	95	15 32 3.4	32 1.2	147.45	0.22	.0004827	52.7	23 1 44.80
6	96	16 31 1.4	30 59.1	147.38	0.33	.0006094	52.8	22 57 48.89
7	97	17 29 57.5	29 55.1	147.30	0.42	.0007362	52.8	22 53 52.98
8	98	18 28 51.8	28 49.3	147.23	0.51	.0008630	52.8	22 49 57.07
9	99	19 27 44.4	27 41.8	147.15	0.57	.0009896	52.7	22 46 1.16
10	100	20 26 35.3	26 32.5	147.08	0.59	.0011157	52.5	22 42 5.25
11	101	21 25 24.5	25 21.6	147.01	0.58	.0012412	52.2	22 38 9.34
12	102	22 24 12.0	24 9.0	146.94	0.54	.0013659	51.8	22 34 13.43
13	103	23 22 57.8	22 54.7	146.87	0.48	.0014898	51.4	22 30 17.53
14	104	24 21 41.8	21 38.6	146.79	0.38	.0016128	51.0	22 26 21.62
15	105	25 20 23.8	20 20.4	146.71	0.28	.0017347	50.6	22 22 25.71
16	106	26 19 3.9	19 0.4	146.63	0.16	.0018555	50.1	22 18 29.80
17	107	27 17 42.0	17 38.4	146.55	−0.04	.0019751	49.6	22 14 33.89
18	108	28 16 18.1	16 14.4	146.46	+0.09	.0020935	49.0	22 10 37.98
19	109	29 14 52.3	14 48.5	146.38	0.22	.0022106	48.5	22 6 42.07
20	110	30 13 24.4	13 20.4	146.29	0.34	.0023264	48.0	22 2 46.16
21	111	31 11 54.4	11 50.3	146.20	0.43	.0024411	47.5	21 58 50.26
22	112	32 10 22.2	10 18.0	146.11	0.49	.0025547	47.1	21 54 54.35
23	113	33 8 47.9	8 43.6	146.02	0.53	.0026674	46.8	21 50 58.44
24	114	34 7 11.4	7 6.9	145.94	0.54	.0027792	46.4	21 47 2.53
25	115	35 5 32.8	5 28.1	145.86	0.51	.0028902	46.1	21 43 6.62
26	116	36 3 52.2	3 47.4	145.77	0.46	.0030005	45.8	21 39 10.71
27	117	37 2 9.6	2 4.7	145.69	0.37	.0031101	45.5	21 35 14.80
28	118	38 0 25.0	0 20.1	145.60	0.27	.0032191	45.3	21 31 18.89
29	119	38 58 38.4	58 33.2	145.52	0.15	.0033276	45.1	21 27 22.98
30	120	39 56 49.8	56 44.4	145.44	+0.02	.0034357	44.9	21 23 27.07
31	121	40 54 59.4	54 54.4	145.37	−0.12	0.0035434	+44.7	21 19 31.16

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour. $-9^{s}.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 44.0	14 44.3	53 57.6	+0.02	53 58.5	+0.13	12 8.4	1.63	14.3
2	14 44.9	14 45.8	54 0.7	0.24	54 4.2	0.34	12 47.9	1.67	15.3
3	14 47.1	14 48.8	54 9.0	0.45	54 15.1	0.57	13 29.0	1.75	16.3
4	14 50.8	14 53.2	54 22.6	0.69	54 31.6	0.81	14 12.4	1.88	17.3
5	14 56.1	14 59.4	54 42.1	0.93	54 54.1	1.07	14 59.1	2.02	18.3
6	15 3.1	15 7.2	55 7.7	1.20	55 22.9	1.34	15 49.3	2.17	19.3
7	15 11.8	15 16.9	55 39.8	1.48	55 58.4	1.62	16 43.0	2.30	20.3
8	15 22.4	15 28.4	56 18.6	1.75	56 40.4	1.88	17 39.2	2.38	21.3
9	15 34.7	15 41.3	57 3.6	2.00	57 28.2	2.09	18 36.4	2.38	22.3
10	15 48.3	15 55.4	57 53.7	2.16	58 19.9	2.19	19 33.1	2.33	23.3
11	16 2.6	16 9.7	58 46.2	2.19	59 12.4	2.15	20 28.2	2.25	24.3
12	16 16.6	16 23.1	59 37.7	2.05	60 1.5	1.90	21 21.5	2.18	25.3
13	16 29.0	16 34.1	60 23.1	1.69	60 41.8	1.43	22 13.3	2.14	26.3
14	16 38.2	16 41.3	60 57.1	1.11	61 8.3	+0.75	23 4.7	2.15	27.3
15	16 43.1	16 43.6	61 15.0	+0.36	61 16.8	−0.05	23 56.8	2.21	28.3
16	16 42.8	16 40.6	61 13.8	−0.46	61 5.9	0.85	☌		29.3
17	16 37.2	16 32.7	60 53.4	1.23	60 36.6	1.56	0 50.9	2.30	0.9
18	16 27.1	16 20.7	60 16.1	1.84	59 52.6	2.07	1 47.5	2.41	1.9
19	16 13.6	16 6.1	59 26.7	2.24	58 59.1	2.35	2 46.5	2.49	2.9
20	15 58.3	15 50.5	58 30.5	2.40	58 1.6	2.40	3 46.7	2.50	3.9
21	15 42.7	15 35.1	57 33.0	2.36	57 5.2	2.27	4 46.0	2.43	4.9
22	15 27.9	15 21.1	56 38.7	2.15	56 13.7	2.00	5 42.6	2.28	5.9
23	15 14.8	15 9.0	55 50.6	1.84	55 29 6	1.67	6 35.1	2.10	6.9
24	15 3.9	14 59.4	55 10.7	1.48	54 54.1	1.28	7 23.3	1 92	7.9
25	14 55.5	14 52.3	54 39.9	1.09	54 28.0	0.90	8 7.7	1.78	8.9
26	14 49.7	14 47.6	54 18.3	0.71	54 10.9	0.53	8 49.2	1.68	9.9
27	14 46.2	14 45.3	54 5.6	0.36	54 2.3	−0.19	9 28.9	1.63	10.9
28	14 44.9	14 45.0	54 0.9	−0.04	54 1.3	+0.10	10 7.8	1.62	11.9
29	14 45.5	14 46.5	54 3.3	+0.23	54 6.7	0.35	10 47.1	1.65	12.9
30	14 47.8	14 49.5	54 11.6	0.46	54 17.7	0.56	11 27.6	1.73	13.9
31	14 51.5	14 53.7	54 25.0	+0.65	54 33.4	+0.74	12 10.5	1.84	14.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 27 52.22	1.7444	S. 0 13 17.8	13.833
1	12 29 36.89	1.7446	0 27 7.8	13.833
2	12 31 21.57	1.7448	0 40 57.7	13.831
3	12 33 6.26	1.7450	0 54 47.5	13.829
4	12 34 50.97	1.7454	1 8 37.2	13.826
5	12 36 35.70	1.7458	1 22 26.7	13.822
6	12 38 20.46	1.7462	1 36 15.9	13.818
7	12 40 5.25	1.7467	1 50 4.8	13.813
8	12 41 50.07	1.7472	2 3 53.5	13.808
9	12 43 34.92	1.7478	2 17 41.8	13.802
10	12 45 19.81	1.7486	2 31 29.7	13.794
11	12 47 4.76	1.7494	2 45 17.1	13.786
12	12 48 49.75	1.7503	2 59 4.0	13.777
13	12 50 34.79	1.7512	3 12 50.3	13.767
14	12 52 19.89	1.7521	3 26 36.1	13.757
15	12 54 5.04	1.7531	3 40 21.2	13.746
16	12 55 50.26	1.7542	3 54 5.6	13.735
17	12 57 35.55	1.7554	4 7 49.3	13.723
18	12 59 20.91	1.7566	4 21 32.3	13.710
19	13 1 6.34	1.7578	4 35 14.4	13.695
20	13 2 51.85	1.7592	4 48 55.6	13.680
21	13 4 37.45	1.7607	5 2 35.9	13.664
22	13 6 23.13	1.7621	5 16 15.2	13.647
23	13 8 8.90	1.7636	S. 5 29 53.6	13.631

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 9 54.76	1.7652	S. 5 43 30.9	13.613
1	13 11 40.72	1.7668	5 57 7.1	13.593
2	13 13 26.78	1.7686	6 10 42.2	13.573
3	13 15 12.95	1.7704	6 24 16.0	13.553
4	13 16 59.23	1.7723	6 37 48.6	13.533
5	13 18 45.62	1.7741	6 51 20.0	13.511
6	13 20 32.12	1.7760	7 4 50.0	13.489
7	13 22 18.74	1.7781	7 18 18.6	13.466
8	13 24 5.49	1.7803	7 31 45.8	13.442
9	13 25 52.37	1.7824	7 45 11.6	13.417
10	13 27 39.38	1.7846	7 58 35.8	13.391
11	13 29 26.52	1.7868	8 11 58.4	13.364
12	13 31 13.80	1.7892	8 25 19.4	13.336
13	13 33 1.22	1.7916	8 38 38.7	13.308
14	13 34 48.79	1.7941	8 51 56.4	13.279
15	13 36 36.51	1.7966	9 5 12.3	13.250
16	13 38 24.38	1.7992	9 18 26.4	13.219
17	13 40 12.41	1.8018	9 31 38.6	13.187
18	13 42 0.60	1.8045	9 44 48.8	13.154
19	13 43 48.95	1.8073	9 57 57.1	13.121
20	13 45 37.47	1.8102	10 11 3.4	13.088
21	13 47 26.17	1.8131	10 24 7.7	13.053
22	13 49 15.04	1.8160	10 37 9.8	13.017
23	13 51 4.09	1.8189	10 50 9.8	12.980
24	13 52 53.31	1.8220	S. 11 3 7.5	12.944

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 52 53.31	1.8220	S. 11 3 7.5	12.944
1	13 54 42.72	1.8252	11 16 3.0	12.906
2	13 56 32.33	1.8285	11 28 56.2	12.867
3	13 58 22.13	1.8318	11 41 47.0	12.827
4	14 0 12.13	1.8350	11 54 35.4	12.786
5	14 2 2.33	1.8383	12 7 21.3	12.744
6	14 3 52.72	1.8417	12 20 4.7	12.702
7	14 5 43.32	1.8452	12 32 45.5	12.659
8	14 7 34.14	1.8487	12 45 23.7	12.615
9	14 9 25.17	1.8523	12 57 59.3	12.570
10	14 11 16.42	1.8560	13 10 32.1	12.524
11	14 13 7.89	1.8597	13 23 2.2	12.477
12	14 14 59.58	1.8635	13 35 29.4	12.429
13	14 16 51.50	1.8673	13 47 53.7	12.380
14	14 18 43.65	1.8711	14 0 15.1	12.330
15	14 20 36.03	1.8750	14 12 33.4	12.280
16	14 22 28.65	1.8791	14 24 48.7	12.229
17	14 24 21.51	1.8832	14 37 0.9	12.177
18	14 26 14.62	1.8872	14 49 10.0	12.124
19	14 28 7.97	1.8913	15 1 15.8	12.070
20	14 30 1.57	1.8955	15 13 18.4	12.015
21	14 31 55.43	1.8997	15 25 17.6	11.959
22	14 33 49.54	1.9040	15 37 13.4	11.902
23	14 35 43.91	1.9083	S. 15 49 5.8	11.844

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 37 38.54	1.9128	S. 16 0 54.7	11.785
1	14 39 33.44	1.9173	16 12 40.0	11.725
2	14 41 28.61	1.9217	16 24 21.7	11.665
3	14 43 24.04	1.9262	16 35 59.8	11.603
4	14 45 19.75	1.9308	16 47 34.1	11.540
5	14 47 15.74	1.9355	16 59 4.7	11.477
6	14 49 12.02	1.9403	17 10 31.4	11.413
7	14 51 8.58	1.9450	17 21 54.2	11.347
8	14 53 5.42	1.9497	17 33 13.1	11.281
9	14 55 2.54	1.9545	17 44 27 9	11.213
10	14 56 59.96	1.9594	17 55 38.6	11.144
11	14 58 57.68	1.9644	18 6 45.2	11.075
12	15 0 55.69	1.9693	18 17 47.6	11.004
13	15 2 54.00	1.9743	18 28 45.7	10.933
14	15 4 52.61	1.9793	18 39 39.5	10.861
15	15 6 51.52	1.9844	18 50 29.0	10.788
16	15 8 50.74	1.9896	19 1 14.0	10.713
17	15 10 50.27	1.9947	19 11 54.5	10.638
18	15 12 50.11	1.9999	19 22 30.5	10.561
19	15 14 50.26	2.0052	19 33 1.8	10.483
20	15 16 50.73	2.0105	19 43 28.5	10.404
21	15 18 51.51	2.0157	19 53 50.4	10.325
22	15 20 52.61	2.0210	20 4 7.5	10.244
23	15 22 54.03	2.0264	20 14 19.7	10.162
24	15 24 55.78	2.0318	S. 20 24 27.0	10.080

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 24 55.78	2.0318	S.20 24 27.0	10.080
1	15 26 57.85	2.0372	20 34 29.3	9.996
2	15 29 0.25	2.0427	20 44 26.6	9.911
3	15 31 2.97	2.0481	20 54 18.7	9.825
4	15 33 6.02	2.0537	21 4 5.6	9.738
5	15 35 9.41	2.0593	21 13 47.3	9.650
6	15 37 13.14	2.0649	21 23 23.6	9.560
7	15 39 17.20	2.0704	21 32 54.5	9.470
8	15 41 21.59	2.0760	21 42 20.0	9.380
9	15 43 26.32	2.0817	21 51 40.1	9.288
10	15 45 31.39	2.0873	22 0 54.6	9.194
11	15 47 36.80	2.0929	22 10 3.4	9.098
12	15 49 42.54	2.0986	22 19 6.4	9.003
13	15 51 48.63	2.1043	22 28 3.7	8.907
14	15 53 55.06	2.1101	22 36 55.2	8.809
15	15 56 1.84	2.1158	22 45 40.8	8.710
16	15 58 8.96	2.1215	22 54 20.4	8.610
17	16 0 16.42	2.1272	23 2 54.0	8.510
18	16 2 24.22	2.1329	23 11 21.6	8.408
19	16 4 32.37	2.1387	23 19 43.0	8.305
20	16 6 40.87	2.1445	23 27 58.2	8.200
21	16 8 49.71	2.1503	23 36 7.0	8.095
22	16 10 58.90	2.1560	23 44 9.5	7.989
23	16 13 8.43	2.1617	S.23 52 5.6	7.882

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 15 18.30	2.1674	S.23 59 55.3	7.773
1	16 17 28.52	2.1732	24 7 38.4	7.663
2	16 19 39.09	2.1790	24 15 14.9	7.551
3	16 21 50.00	2.1848	24 22 44.6	7.439
4	16 24 1.26	2.1905	24 30 7.6	7.327
5	16 26 12.86	2.1961	24 37 23.9	7.214
6	16 28 24.80	2.2018	24 44 33.3	7.099
7	16 30 37.08	2.2075	24 51 35.7	6.982
8	16 32 49.70	2.2133	24 58 31.1	6.865
9	16 35 2.67	2.2190	25 5 19.5	6.747
10	16 37 15.98	2.2246	25 12 0.7	6.627
11	16 39 29.62	2.2301	25 18 34.7	6.507
12	16 41 43.59	2.2357	25 25 1.5	6.385
13	16 43 57.90	2.2413	25 31 20.9	6.262
14	16 46 12.54	2.2469	25 37 33.0	6.139
15	16 48 27.52	2.2524	25 43 37.6	6.015
16	16 50 42.83	2.2578	25 49 34.7	5.889
17	16 52 58.46	2.2632	25 55 24.2	5.762
18	16 55 14.41	2.2686	26 1 6.1	5.634
19	16 57 30.69	2.2740	26 6 40.3	5.505
20	16 59 47.29	2.2793	26 12 6.7	5.374
21	17 2 4.21	2.2846	26 17 25.2	5.243
22	17 4 21.44	2.2898	26 22 35.8	5.111
23	17 6 38.98	2.2950	26 27 38.6	4.979
24	17 8 56.84	2.3002	S.26 32 33.4	4.845

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 8 56.84	2.3002	S.26 32 33.4	4.845
1	17 11 15.00	2.3053	26 37 20.1	4.710
2	17 13 33.47	2.3103	26 41 58.7	4.574
3	17 15 52.24	2.3153	26 46 29.0	4.437
4	17 18 11.31	2.3201	26 50 51.1	4.300
5	17 20 30.67	2.3250	26 55 5.0	4.162
6	17 22 50.31	2.3298	26 59 10.5	4.022
7	17 25 10.24	2.3346	27 3 7.6	3.881
8	17 27 30.46	2.3394	27 6 56.2	3.739
9	17 29 50.97	2.3440	27 10 36.3	3.597
10	17 32 11.75	2.3485	27 14 7.8	3.453
11	17 34 32.79	2.3530	27 17 30.7	3.309
12	17 36 54.10	2.3574	27 20 44.9	3.164
13	17 39 15.68	2.3618	27 23 50.4	3.018
14	17 41 37.51	2.3660	27 26 47.1	2.871
15	17 43 59.60	2.3702	27 29 34.9	2.724
16	17 46 21.94	2.3742	27 32 13.9	2.576
17	17 48 44.52	2.3782	27 34 44.0	2.427
18	17 51 7.33	2.3822	27 37 5.1	2.277
19	17 53 30.38	2.3861	27 39 17.2	2.126
20	17 55 53.66	2.3899	27 41 20.2	1.974
21	17 58 17.17	2.3937	27 43 14.1	1.822
22	18 0 40.90	2.3973	27 44 58.8	1.669
23	18 3 4.84	2.4007	S.27 46 34.4	1.515

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 5 28.98	2.4041	S.27 48 0.7	1.361
1	18 7 53.33	2.4075	27 49 17.7	1.206
2	18 10 17.88	2.4107	27 50 25.4	1.051
3	18 12 42.62	2.4139	27 51 23.8	0.895
4	18 15 7.55	2.4170	27 52 12.8	0.737
5	18 17 32.66	2.4199	27 52 52.3	0.579
6	18 19 57.94	2.4228	27 53 22.3	0.421
7	18 22 23.39	2.4256	27 53 42.8	0.263
8	18 24 49.00	2.4283	27 53 53.8	−0.104
9	18 27 14.78	2.4309	27 53 55.3	+0.055
10	18 29 40.71	2.4333	27 53 47.2	0.216
11	18 32 6.78	2.4357	27 53 29.4	0.377
12	18 34 32.99	2.4379	27 53 1.9	0.538
13	18 36 59.33	2.4401	27 52 24.8	0.699
14	18 39 25.80	2.4422	27 51 37.9	0.861
15	18 41 52.39	2.4441	27 50 41.4	1.023
16	18 44 19.09	2.4459	27 49 35.1	1.186
17	18 46 45.90	2.4477	27 48 19.0	1.350
18	18 49 12.81	2.4493	27 46 53.1	1.513
19	18 51 39.82	2.4508	27 45 17.4	1.676
20	18 54 6.91	2.4523	27 43 31.8	1.840
21	18 56 34.09	2.4536	27 41 36.5	2.004
22	18 59 1.34	2.4548	27 39 31.3	2.169
23	19 1 28.66	2.4560	27 37 16.1	2.334
24	19 3 56.06	2.4570	S.27 34 51.1	2.499

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 9.					SATURDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	19 3 56.06	2.4570	S.27 34 51.1	2.499	0	21 1 12.52	2.3991	S.22 26 57.2	10.178
1	19 6 23.51	2.4578	27 32 16.2	2.664	1	21 3 36.38	2.3963	22 16 42.2	10.323
2	19 8 51.00	2.4586	27 29 31.3	2.829	2	21 6 0.07	2.3935	22 6 18.5	10.467
3	19 11 18.54	2.4593	27 26 36.6	2.994	3	21 8 23.60	2.3907	21 55 46.1	10.611
4	19 13 46.12	2.4599	27 23 32.0	3.160	4	21 10 46.95	2.3877	21 45 5.1	10.754
5	19 16 13.73	2.4604	27 20 17.4	3.326	5	21 13 10.13	2.3848	21 34 15.6	10.896
6	19 18 41.37	2.4608	27 16 52.8	3.491	6	21 15 33.13	2.3819	21 23 17.6	11.037
7	19 21 9.03	2.4611	27 13 18.3	3.657	7	21 17 55.96	2.3790	21 12 11.2	11.177
8	19 23 36.70	2.4612	27 9 33.9	3.822	8	21 20 18.61	2.3760	21 0 56.4	11.316
9	19 26 4.37	2.4613	27 5 39.6	3.988	9	21 22 41.08	2.3730	20 49 33.3	11.454
10	19 28 32.05	2.4613	27 1 35.3	4.154	10	21 25 3.37	2.3700	20 38 2.0	11.590
11	19 30 59.72	2.4612	26 57 21.1	4.320	11	21 27 25.48	2.3670	20 26 22.5	11.725
12	19 33 27.39	2.4610	26 52 57.0	4.485	12	21 29 47.41	2.3640	20 14 35.0	11.859
13	19 35 55.04	2.4606	26 48 22.9	4.650	13	21 32 9.16	2.3609	20 2 39.5	11.993
14	19 38 22.66	2.4602	26 43 38.9	4.815	14	21 34 30.73	2.3579	19 50 35.9	12.125
15	19 40 50.26	2.4597	26 38 45.1	4.980	15	21 36 52.11	2.3549	19 38 24.4	12.256
16	19 43 17.82	2.4590	26 33 41.4	5.145	16	21 39 13.32	2.3519	19 26 5.1	12.386
17	19 45 45.34	2.4583	26 28 27.8	5.310	17	21 41 34.34	2.3489	19 13 38.1	12.514
18	19 48 12.82	2.4576	26 23 4.3	5.475	18	21 43 55.18	2.3458	19 1 3.4	12.641
19	19 50 40.25	2.4567	26 17 30.9	5.638	19	21 46 15.84	2.3428	18 48 21.1	12.767
20	19 53 7.62	2.4557	26 11 47.7	5.801	20	21 48 36.32	2.3398	18 35 31.3	12.892
21	19 55 34.93	2.4546	26 5 54.8	5.964	21	21 50 56.61	2.3368	18 22 34.0	13.016
22	19 58 2.17	2.4534	25 59 52.1	6.127	22	21 53 16.73	2.3338	18 9 29.3	13.139
23	20 0 29.34	2.4522	S.25 53 39.5	6.290	23	21 55 36.67	2.3308	S.17 56 17.3	13.260
	FRIDAY 10.					SUNDAY 12.			
0	20 2 56.44	2.4510	S.25 47 17.2	6.452	0	21 57 56.43	2.3279	S.17 42 58.1	13.380
1	20 5 23.46	2.4496	25 40 45.2	6.614	1	22 0 16.01	2.3249	17 29 31.7	13.498
2	20 7 50.39	2.4480	25 34 3.4	6.776	2	22 2 35.42	2.3220	17 15 58.3	13.615
3	20 10 17.22	2.4464	25 27 12.0	6.938	3	22 4 54.65	2.3190	17 2 17.9	13.731
4	20 12 43.96	2.4448	25 20 10.9	7.098	4	22 7 13.71	2.3161	16 48 30.6	13.845
5	20 15 10.60	2.4432	25 13 0.2	7.258	5	22 9 32.59	2.3133	16 34 36.5	13.958
6	20 17 37.14	2.4414	25 5 40.0	7.418	6	22 11 51.30	2.3104	16 20 35.6	14.070
7	20 20 3.57	2.4395	24 58 10.2	7.577	7	22 14 9.84	2.3076	16 6 28.0	14.180
8	20 22 29.88	2.4376	24 50 30.8	7.736	8	22 16 28.21	2.3048	15 52 13.9	14.289
9	20 24 56.08	2.4357	24 42 41.9	7.894	9	22 18 46.42	2.3021	15 37 53.4	14.396
10	20 27 22.16	2.4336	24 34 43.6	8.050	10	22 21 4.46	2.2994	15 23 26.5	14.502
11	20 29 48.11	2.4313	24 26 35.8	8.207	11	22 23 22.34	2.2967	15 8 53.2	14.607
12	20 32 13.92	2.4291	24 18 18.7	8.363	12	22 25 40.06	2.2940	14 54 13.6	14.711
13	20 34 39.60	2.4269	24 9 52.3	8.518	13	22 27 57.62	2.2914	14 39 27.9	14.812
14	20 37 5.15	2.4247	24 1 16.5	8.673	14	22 30 15.02	2.2888	14 24 36.2	14.911
15	20 39 30.57	2.4224	23 52 31.5	8.827	15	22 32 32.27	2.2862	14 9 38.6	15.009
16	20 41 55.84	2.4199	23 43 37.3	8.981	16	22 34 49.37	2.2837	13 54 35.1	15.106
17	20 44 20.96	2.4175	23 34 33.9	9.134	17	22 37 6.32	2.2812	13 39 25.8	15.201
18	20 46 45.94	2.4151	23 25 21.3	9.285	18	22 39 23.12	2.2788	13 24 10.9	15.295
19	20 49 10.77	2.4125	23 15 59.7	9.435	19	22 41 39.78	2.2765	13 8 50.4	15.388
20	20 51 35.44	2.4099	23 6 29.0	9.585	20	22 43 56.30	2.2742	12 53 24.3	15.479
21	20 53 59.95	2.4072	22 56 49.4	9.734	21	22 46 12.68	2.2718	12 37 52.9	15.568
22	20 56 24.30	2.4045	22 47 0.9	9.883	22	22 48 28.92	2.2696	12 22 16.2	15.655
23	20 58 48.49	2.4018	22 37 3.5	10.031	23	22 50 45.03	2.2675	12 6 34.2	15.741
24	21 1 12.52	2.3991	S.22 26 57.2	10.178	24	22 53 1.02	2.2654	S.11 50 47.2	15.825

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 53 1.02	2.2654	S. 11 50 47.2	15.825
1	22 55 16.88	2.2633	11 34 55.2	15.908
2	22 57 32.61	2.2612	11 18 58.2	15.989
3	22 59 48.23	2.2593	11 2 56.5	16.068
4	23 2 3.73	2.2574	10 46 50.1	16.146
5	23 4 19.12	2.2555	10 30 39.0	16.222
6	23 6 34.39	2.2537	10 14 23.4	16.296
7	23 8 49.56	2.2520	9 58 3.4	16.368
8	23 11 4.63	2.2503	9 41 39.1	16.439
9	23 13 19.60	2.2487	9 25 10.7	16.508
10	23 15 34.47	2.2471	9 8 38.2	16.575
11	23 17 49.25	2.2457	8 52 1.6	16.641
12	23 20 3.95	2.2443	8 35 21.2	16.705
13	23 22 18.57	2.2429	8 18 37.0	16.767
14	23 24 33.11	2.2415	8 1 49.1	16.828
15	23 26 47.56	2.2403	7 44 57.7	16.886
16	23 29 1.94	2.2392	7 28 2.8	16.942
17	23 31 16.26	2.2382	7 11 4.5	16.996
18	23 33 30.53	2.2372	6 54 3.1	17.049
19	23 35 44.74	2.2362	6 36 58.6	17.101
20	23 37 58.88	2.2353	6 19 50.9	17.151
21	23 40 12.97	2.2345	6 2 40.3	17.199
22	23 42 27.02	2.2338	5 45 26.9	17.245
23	23 44 41.03	2.2331	S. 5 28 10.9	17.288

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 46 54.99	2.2324	S. 5 10 52.4	17.329
1	23 49 8.92	2.2319	4 53 31.4	17.369
2	23 51 22.83	2.2315	4 36 8.0	17.407
3	23 53 36.71	2.2312	4 18 42.4	17.444
4	23 55 50.57	2.2309	4 1 14.7	17.478
5	23 58 4.42	2.2307	3 43 44.9	17.511
6	0 0 18.26	2.2305	3 26 13.3	17.542
7	0 2 32.09	2.2305	3 8 39.9	17.570
8	0 4 45.92	2.2305	2 51 4.8	17.597
9	0 6 59.75	2.2305	2 33 28.3	17.621
10	0 9 13.59	2.2307	2 15 50.3	17.643
11	0 11 27.44	2.2310	1 58 11.0	17.663
12	0 13 41.31	2.2313	1 40 30.6	17.682
13	0 15 55.20	2.2317	1 22 49.1	17.700
14	0 18 9.12	2.2322	1 5 6.6	17.715
15	0 20 23.06	2.2327	0 47 23.3	17.727
16	0 22 37.04	2.2333	0 29 39.3	17.738
17	0 24 51.06	2.2340	S. 0 11 54.7	17.746
18	0 27 5.12	2.2347	N. 0 5 50.3	17.753
19	0 29 19.23	2.2355	0 23 35.7	17.758
20	0 31 33.39	2.2365	0 41 21.3	17.761
21	0 33 47.62	2.2376	0 59 7.0	17.762
22	0 36 1.91	2.2387	1 16 52.7	17.760
23	0 38 16.27	2.2398	1 34 38.3	17.756
24	0 40 30.69	2.2410	N. 1 52 23.5	17.750

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 40 30.69	2.2410	N. 1 52 23.5	17.750
1	0 42 45.19	2.2423	2 10 8.3	17.743
2	0 44 59.77	2.2437	2 27 52.7	17.734
3	0 47 14.44	2.2452	2 45 36.4	17.722
4	0 49 29.20	2.2467	3 3 19.3	17.708
5	0 51 44.05	2.2483	3 21 1.4	17.693
6	0 53 59.00	2.2500	3 38 42.5	17.675
7	0 56 14.05	2.2518	3 56 22.4	17.655
8	0 58 29.22	2.2537	4 14 1.1	17.633
9	1 0 44.50	2.2556	4 31 38.3	17.609
10	1 2 59.90	2.2576	4 49 14.1	17.582
11	1 5 15.42	2.2596	5 6 48.2	17.553
12	1 7 31.05	2.2616	5 24 20.5	17.523
13	1 9 46.81	2.2639	5 41 50.9	17.491
14	1 12 2.72	2.2663	5 59 19.4	17.457
15	1 14 18.77	2.2687	6 16 45.7	17.420
16	1 16 34.96	2.2711	6 34 9.8	17.381
17	1 18 51.30	2.2735	6 51 31.5	17.340
18	1 21 7.78	2.2759	7 8 50.6	17.297
19	1 23 24.41	2.2785	7 26 7.1	17.252
20	1 25 41.21	2.2813	7 43 20.9	17.206
21	1 27 58.18	2.2841	8 0 31.8	17.157
22	1 30 15.31	2.2869	8 17 39.7	17.105
23	1 32 32.61	2.2898	N. 8 34 44.4	17.051

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 34 50.09	2.2928	N. 8 51 45.8	16.995
1	1 37 7.75	2.2958	9 8 43.8	16.938
2	1 39 25.59	2.2987	9 25 38.4	16.879
3	1 41 43.60	2.3018	9 42 29.3	16.818
4	1 44 1.80	2.3050	9 59 16.5	16.754
5	1 46 20.20	2.3083	10 15 59.8	16.687
6	1 48 38.80	2.3117	10 32 39.0	16.619
7	1 50 57.60	2.3150	10 49 14.1	16.550
8	1 53 16.60	2.3183	11 5 45.0	16.478
9	1 55 35.80	2.3217	11 22 11.5	16.404
10	1 57 55.21	2.3252	11 38 33.5	16.328
11	2 0 14.83	2.3287	11 54 50.9	16.249
12	2 2 34.67	2.3323	12 11 3.4	16.168
13	2 4 54.72	2.3360	12 27 11.1	16.087
14	2 7 14.99	2.3397	12 43 13.9	16.004
15	2 9 35.49	2.3435	12 59 11.5	15.918
16	2 11 56.21	2.3472	13 15 4.0	15.829
17	2 14 17.16	2.3510	13 30 51.1	15.738
18	2 16 38.34	2.3548	13 46 32.6	15.646
19	2 18 59.75	2.3587	14 2 8.5	15.553
20	2 21 21.39	2.3626	14 17 38.8	15.458
21	2 23 43.27	2.3665	14 33 3.4	15.360
22	2 26 5.38	2.3705	14 48 22.0	15.259
23	2 28 27.73	2.3745	15 3 34.5	15.156
24	2 30 50.33	2.3786	N. 15 18 40.7	15.051

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 30 50.33	2.3786	N.15 18 40.7	15.051
1	2 33 13.17	2.3827	15 33 40.6	14.946
2	2 35 36.25	2.3867	15 48 34.2	14.840
3	2 37 59.57	2.3907	16 3 21.4	14.731
4	2 40 23.14	2.3948	16 18 1.9	14.619
5	2 42 46.96	2.3989	16 32 35.7	14.505
6	2 45 11.02	2.4030	16 47 2.5	14.390
7	2 47 35.33	2.4072	17 1 22.4	14.273
8	2 49 59.89	2.4113	17 15 35.3	14.155
9	2 52 24.69	2.4154	17 29 40.9	14.034
10	2 54 49.74	2.4196	17 43 39.3	13.912
11	2 57 15.05	2.4238	17 57 30.3	13.788
12	2 59 40.61	2.4280	18 11 13.8	13.662
13	3 2 6.42	2.4322	18 24 49.7	13.534
14	3 4 32.47	2.4362	18 38 17.9	13.404
15	3 6 58.77	2.4403	18 51 38.3	13.273
16	3 9 25.32	2.4444	19 4 50.7	13.140
17	3 11 52.11	2.4485	19 17 55.2	13.007
18	3 14 19.15	2.4527	19 30 51.6	12.872
19	3 16 46.44	2.4568	19 43 39.8	12.734
20	3 19 13.97	2.4608	19 56 19.7	12.595
21	3 21 41.73	2.4647	20 8 51.2	12.454
22	3 24 9.73	2.4687	20 21 14.2	12.312
23	3 26 37.98	2.4727	N.20 33 28.7	12.168

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 29 6.47	2.4767	N.20 45 34.4	12.023
1	3 31 35.19	2.4805	20 57 31.4	11.877
2	3 34 4.14	2.4843	21 9 19.6	11.728
3	3 36 33.32	2.4882	21 20 58.8	11.578
4	3 39 2.73	2.4920	21 32 29.0	11.428
5	3 41 32.36	2.4957	21 43 50.2	11.275
6	3 44 2.20	2.4993	21 55 2.1	11.122
7	3 46 32.25	2.5029	22 6 4.8	10.967
8	3 49 2.53	2.5065	22 16 58.2	10.811
9	3 51 33.03	2.5100	22 27 42.1	10.653
10	3 54 3.74	2.5133	22 38 16.5	10.494
11	3 56 34.64	2.5165	22 48 41.4	10.334
12	3 59 5.73	2.5198	22 58 56.6	10.173
13	4 1 37.02	2.5230	23 9 2.1	10.011
14	4 4 8.50	2.5263	23 18 57.9	9.847
15	4 6 40.18	2.5295	23 28 43.8	9.683
16	4 9 12.04	2.5325	23 38 19.8	9.517
17	4 11 44.07	2.5353	23 47 45.9	9.351
18	4 14 16.27	2.5380	23 57 1.9	9.183
19	4 16 48.63	2.5407	24 6 7.8	9.014
20	4 19 21.16	2.5434	24 15 3.7	8.845
21	4 21 53.85	2.5460	24 23 49.3	8.675
22	4 24 26.69	2.5484	24 32 24.7	8.504
23	4 26 59.67	2.5507	24 40 49.8	8.331
24	4 29 32.78	2.5530	N.24 49 4.4	8.158

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 29 32.78	2.5530	N.24 49 4.4	8.158
1	4 32 6.03	2.5552	24 57 8.7	7.985
2	4 34 39.40	2.5573	25 5 2.5	7.810
3	4 37 12.90	2.5592	25 12 45.8	7.635
4	4 39 46.51	2.5610	25 20 18.6	7.460
5	4 42 20.23	2.5627	25 27 40.9	7.284
6	4 44 54.05	2.5644	25 34 52.6	7.107
7	4 47 27.96	2.5659	25 41 53.7	6.929
8	4 50 1.96	2.5674	25 48 44.1	6.749
9	4 52 36.05	2.5687	25 55 23.6	6.569
10	4 55 10.21	2.5698	26 1 52.4	6.392
11	4 57 44.43	2.5707	26 8 10.6	6.214
12	5 0 18.70	2.5716	26 14 18.1	6.034
13	5 2 53.02	2.5724	26 20 14.7	5.853
14	5 5 27.39	2.5732	26 26 0.5	5.672
15	5 8 1.81	2.5738	26 31 35.3	5.491
16	5 10 36.25	2.5741	26 36 59.3	5.310
17	5 13 10.70	2.5743	26 42 12.5	5.129
18	5 15 45.16	2.5744	26 47 14.8	4.948
19	5 18 19.63	2.5745	26 52 6.2	4.766
20	5 20 54.10	2.5743	26 56 46.7	4.584
21	5 23 28.55	2.5740	27 1 16.3	4.403
22	5 26 2.98	2.5736	27 5 35.0	4.221
23	5 28 37.38	2.5730	N.27 9 42.8	4.039

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 31 11.75	2.5724	N.27 13 39.6	3.857
1	5 33 46.07	2.5716	27 17 25.5	3.675
2	5 36 20.34	2.5707	27 21 0.6	3.494
3	5 38 54.55	2.5696	27 24 24.8	3.313
4	5 41 28.69	2.5684	27 27 38.1	3.132
5	5 44 2.75	2.5671	27 30 40.6	2.951
6	5 46 36.74	2.5656	27 33 32.1	2.769
7	5 49 10.63	2.5639	27 36 12.8	2.588
8	5 51 44.41	2.5622	27 38 42.8	2.408
9	5 54 18.09	2.5603	27 41 1.9	2.228
10	5 56 51.65	2.5582	27 43 10.2	2.049
11	5 59 25.08	2.5560	27 45 7.8	1.870
12	6 1 58.37	2.5537	27 46 54.6	1.691
13	6 4 31.52	2.5513	27 48 30.7	1.513
14	6 7 4.52	2.5487	27 49 56.2	1.336
15	6 9 37.37	2.5460	27 51 11.0	1.159
16	6 12 10.05	2.5432	27 52 15.2	0.982
17	6 14 42.55	2.5403	27 53 8.8	0.805
18	6 17 14.88	2.5372	27 53 51.8	0.629
19	6 19 47.02	2.5340	27 54 24.3	0.455
20	6 22 18.96	2.5306	27 54 46.4	0.281
21	6 24 50.69	2.5271	27 54 58.1	+0.108
22	6 27 22.21	2.5235	27 54 59.4	−0.065
23	6 29 53.51	2.5198	27 54 50.3	0.237
24	6 32 24.59	2.5160	N.27 54 31.0	0.408

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 21.					THURSDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 32 24.59	2.5160	N.27 54 31.0	0.408	0	8 27 0.11	2.2349	N.24 36 59.3	7.373
1	6 34 55.43	2.5120	27 54 1.4	0.578	1	8 29 14.00	2.2281	24 29 33.5	7.488
2	6 37 26.03	2.5080	27 53 21.6	0.748	2	8 31 27.48	2.2212	24 22 0.8	7.602
3	6 39 56.39	2.5038	27 52 31.7	0.916	3	8 33 40.55	2.2144	24 14 21.3	7.714
4	6 42 26.49	2.4995	27 51 31.7	1.084	4	8 35 53.21	2.2076	24 6 35.1	7.826
5	6 44 56.33	2.4950	27 50 21.6	1.252	5	8 38 5.46	2.2007	23 58 42.2	7.936
6	6 47 25.80	2.4905	27 49 1.5	1.418	6	8 40 17.30	2.1939	23 50 42.8	8.044
7	6 49 55.18	2.4859	27 47 31.5	1.583	7	8 42 28.73	2.1871	23 42 36.9	8.152
8	6 52 24.20	2.4811	27 45 51.6	1.747	8	8 44 39.75	2.1802	23 34 24.6	8.258
9	6 54 52.93	2.4763	27 44 1.9	1.910	9	8 46 50.36	2.1734	23 26 6.0	8.363
10	6 57 21.36	2.4714	27 42 2.4	2.072	10	8 49 0.56	2.1666	23 17 41.1	8.467
11	6 59 49.50	2.4664	27 39 53.2	2.233	11	8 51 10.36	2.1599	23 9 10.0	8.569
12	7 2 17.33	2.4613	27 37 34.4	2.393	12	8 53 19.76	2.1532	23 0 32.8	8.670
13	7 4 44.85	2.4560	27 35 6.0	2.553	13	8 55 28.75	2.1465	22 51 49.6	8.770
14	7 7 12.05	2.4507	27 32 28.1	2.711	14	8 57 37.34	2.1398	22 43 0.4	8.869
15	7 9 38.94	2.4454	27 29 40.7	2.868	15	8 59 45.53	2.1331	22 34 5.3	8.967
16	7 12 5.50	2.4399	27 26 44.0	3.023	16	9 1 53.32	2.1265	22 25 4.4	9.064
17	7 14 31.73	2.4343	27 23 37.9	3.178	17	9 4 0.71	2.1199	22 15 57.7	9.160
18	7 16 57.62	2.4286	27 20 22.6	3.332	18	9 6 7.70	2.1133	22 6 45.3	9.253
19	7 19 23.17	2.4229	27 16 58.1	3.484	19	9 8 14.30	2.1067	21 57 27.4	9.345
20	7 21 48.37	2.4172	27 13 24.5	3.635	20	9 10 20.51	2.1002	21 48 3.9	9.437
21	7 24 13.23	2.4113	27 9 41.9	3.785	21	9 12 26.33	2.0937	21 38 34.9	9.528
22	7 26 37.73	2.4053	27 5 50.3	3.935	22	9 14 31.76	2.0873	21 29 0.5	9.618
23	7 29 1.87	2.3993	N.27 1 49.8	4.083	23	9 16 36.81	2.0809	N.21 19 20.8	9.705
	WEDNESDAY 22.					FRIDAY 24.			
0	7 31 25.65	2.3933	N.26 57 40.4	4.230	0	9 18 41.47	2.0745	N.21 9 35.9	9.792
1	7 33 49.06	2.3871	26 53 22.3	4.375	1	9 20 45.75	2.0682	20 59 45.8	9.878
2	7 36 12.10	2.3809	26 48 55.5	4.519	2	9 22 49.65	2.0619	20 49 50.6	9.963
3	7 38 34.77	2.3747	26 44 20.1	4.661	3	9 24 53.18	2.0556	20 39 50.3	10.047
4	7 40 57.06	2.3684	26 39 36.2	4.803	4	9 26 56.33	2.0494	20 29 45.0	10.129
5	7 43 18.97	2.3621	26 34 43.8	4.944	5	9 28 59.11	2.0432	20 19 34.8	10.210
6	7 45 40.51	2.3558	26 29 42.9	5.084	6	9 31 1.52	2.0370	20 9 19.8	10.290
7	7 48 1.66	2.3493	26 24 33.7	5.222	7	9 33 3.56	2.0310	19 59 0.0	10.370
8	7 50 22.42	2.3427	26 19 16.3	5.358	8	9 35 5.24	2.0250	19 48 35.5	10.448
9	7 52 42.78	2.3361	26 13 50.8	5.492	9	9 37 6.57	2.0191	19 38 6.3	10.525
10	7 55 2.75	2.3296	26 8 17.3	5.626	10	9 39 7.54	2.0131	19 27 32.5	10.601
11	7 57 22.33	2.3230	26 2 35.0	5.760	11	9 41 8.15	2.0072	19 16 54.2	10.675
12	7 59 41.51	2.3163	25 56 45.9	5.893	12	9 43 8.41	2.0014	19 6 11.5	10.749
13	8 2 0.29	2.3096	25 50 48.4	6.023	13	9 45 8.32	1.9956	18 55 24.4	10.822
14	8 4 18.67	2.3029	25 44 43.2	6.151	14	9 47 7.89	1.9900	18 44 33.0	10.894
15	8 6 36.64	2.2962	25 38 30.3	6.279	15	9 49 7.12	1.9843	18 33 37.2	10.965
16	8 8 54.21	2.2895	25 32 9.8	6.406	16	9 51 6.01	1.9787	18 22 37.2	11.034
17	8 11 11.38	2.2827	25 25 41.6	6.532	17	9 53 4.56	1.9731	18 11 33.1	11.102
18	8 13 28.14	2.2759	25 19 5.9	6.656	18	9 55 2.78	1.9675	18 0 25.0	11.169
19	8 15 44.49	2.2691	25 12 22.9	6.778	19	9 57 0.67	1.9621	17 49 12.8	11.236
20	8 18 0.43	2.2624	25 5 32.5	6.901	20	9 58 58.24	1.9568	17 37 56.7	11.302
21	8 20 15.97	2.2556	24 58 34.9	7.021	21	10 0 55.49	1.9515	17 26 36.6	11.368
22	8 22 31.10	2.2487	24 51 30.2	7.139	22	10 2 52.42	1.9463	17 15 12.6	11.431
23	8 24 45.81	2.2418	24 44 18.3	7.257	23	10 4 49.04	1.9411	17 3 44.9	11.493
24	8 27 0.11	2.2349	N.24 36 59.3	7.373	24	10 6 45.35	1.9359	N.16 52 13.5	11.554

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 6 45.35	1.9359	N.16 52 13.5	11.554
1	10 8 41.35	1.9308	16 40 38.4	11.615
2	10 10 37.05	1.9258	16 28 59.7	11.674
3	10 12 32.45	1.9208	16 17 17.5	11.733
4	10 14 27.55	1.9159	16 5 31.8	11.791
5	10 16 22.36	1.9111	15 53 42.6	11.849
6	10 18 16.88	1.9063	15 41 49.9	11.906
7	10 20 11.12	1.9016	15 29 53.9	11.960
8	10 22 5.08	1.8970	15 17 54.7	12.012
9	10 23 58.76	1.8924	15 5 52.4	12.065
10	10 25 52.17	1.8879	14 53 46.9	12.118
11	10 27 45.31	1.8834	14 41 38.2	12.171
12	10 29 38.18	1.8790	14 29 26.4	12.222
13	10 31 30.79	1.8748	14 17 11.6	12.271
14	10 33 23.15	1.8706	14 4 53.9	12.319
15	10 35 15.26	1.8664	13 52 33.3	12.368
16	10 37 7.12	1.8622	13 40 9.8	12.415
17	10 38 58.73	1.8581	13 27 43.5	12.461
18	10 40 50.09	1.8541	13 15 14.5	12.506
19	10 42 41.22	1.8502	13 2 42.8	12.551
20	10 44 32.12	1.8464	12 50 8.4	12.595
21	10 46 22.79	1.8426	12 37 31.4	12.639
22	10 48 13.23	1.8389	12 24 51.8	12.681
23	10 50 3.46	1.8353	N.12 12 9.8	12.722

SUNDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 51 53.47	1.8317	N.11 59 25.3	12.762
1	10 53 43.26	1.8282	11 46 38.4	12.801
2	10 55 32.85	1.8248	11 33 49.2	12.840
3	10 57 22.24	1.8214	11 20 57.6	12.878
4	10 59 11.43	1.8181	11 8 3.8	12.916
5	11 1 0.42	1.8148	10 55 7.8	12.953
6	11 2 49.21	1.8116	10 42 9.5	12.990
7	11 4 37.82	1.8086	10 29 9.1	13.024
8	11 6 26.25	1.8056	10 16 6.7	13.057
9	11 8 14.49	1.8026	10 3 2.3	13.090
10	11 10 2.56	1.7998	9 49 55.9	13.123
11	11 11 50.46	1.7970	9 36 47.6	13.156
12	11 13 38.20	1.7943	9 23 37.3	13.187
13	11 15 25.78	1.7915	9 10 25.2	13.217
14	11 17 13.20	1.7888	8 57 11.3	13.246
15	11 19 0.45	1.7862	8 43 55.7	13.274
16	11 20 47.55	1.7838	8 30 38.4	13.303
17	11 22 34.51	1.7815	8 17 19.4	13.331
18	11 24 21.34	1.7792	8 3 58.7	13.359
19	11 26 8.03	1.7770	7 50 36.4	13.384
20	11 27 54.58	1.7748	7 37 12.7	13.408
21	11 29 41.00	1.7727	7 23 47.5	13.433
22	11 31 27.30	1.7706	7 10 20.8	13.457
23	11 33 13.48	1.7686	6 56 52.7	13.481
24	11 34 59.53	1.7666	N. 6 43 23.2	13.503

MONDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 34 59.53	1.7666	N. 6 43 23.2	13.503
1	11 36 45.47	1.7648	6 29 52.4	13.525
2	11 38 31.31	1.7631	6 16 20.3	13.544
3	11 40 17.05	1.7614	6 2 47.1	13.563
4	11 42 2.69	1.7598	5 49 12.7	13.584
5	11 43 48.24	1.7582	5 35 37.1	13.604
6	11 45 33.68	1.7567	5 22 0.3	13.622
7	11 47 19.04	1.7553	5 8 22.5	13.638
8	11 49 4.32	1.7540	4 54 43.7	13.654
9	11 50 49.52	1.7527	4 41 4.0	13.670
10	11 52 34.65	1.7515	4 27 23.3	13.686
11	11 54 19.71	1.7503	4 13 41.7	13.700
12	11 56 4.69	1.7492	3 59 59.3	13.714
13	11 57 49.61	1.7482	3 46 16.1	13.727
14	11 59 34.48	1.7474	3 32 32.1	13.739
15	12 1 19.30	1.7466	3 18 47.4	13.751
16	12 3 4.07	1.7457	3 5 2.0	13.763
17	12 4 48.79	1.7449	2 51 15.9	13.773
18	12 6 33.46	1.7442	2 37 29.3	13.782
19	12 8 18.10	1.7436	2 23 42.1	13.791
20	12 10 2.71	1.7431	2 9 54.4	13.799
21	12 11 47.28	1.7426	1 56 6.2	13.807
22	12 13 31.83	1.7423	1 42 17.6	13.813
23	12 15 16.37	1.7420	N. 1 28 28.6	13.819

TUESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 17 0.88	1.7417	N. 1 14 39.3	13.825
1	12 18 45.38	1.7416	1 0 49.7	13.829
2	12 20 29.88	1.7415	0 46 59.8	13.833
3	12 22 14.37	1.7414	0 33 9.7	13.837
4	12 23 58.85	1.7414	0 19 19.4	13.839
5	12 25 43.35	1.7416	N. 0 5 29.0	13.841
6	12 27 27.85	1.7418	S. 0 8 21.5	13.843
7	12 29 12.36	1.7420	0 22 12.1	13.843
8	12 30 56.89	1.7423	0 36 2.7	13.842
9	12 32 41.44	1.7426	0 49 53.2	13.841
10	12 34 26.01	1.7430	1 3 43.6	13.840
11	12 36 10.61	1.7435	1 17 33.9	13.838
12	12 37 55.24	1.7441	1 31 24.1	13.835
13	12 39 39.91	1.7448	1 45 14.1	13.831
14	12 41 24.62	1.7455	1 59 3.8	13.826
15	12 43 9.37	1.7463	2 12 53.1	13.820
16	12 44 54.17	1.7471	2 26 42.1	13.814
17	12 46 39.03	1.7480	2 40 30.8	13.808
18	12 48 23.94	1.7490	2 54 19.1	13.801
19	12 50 8.91	1.7500	3 8 6.9	13.793
20	12 51 53.95	1.7512	3 21 54.2	13.783
21	12 53 39.06	1.7524	3 35 40.8	13.773
22	12 55 24.24	1.7536	3 49 26.9	13.763
23	12 57 9.50	1.7548	4 3 12.4	13.752
24	12 58 54.83	1.7562	S. 4 16 57.2	13.740

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 29.					THURSDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 58 54.83	1.7562	S. 4 16 57.2	13.740	0	13 41 37.29	1.8089	S. 9 41 24.8	13.222
1	13 0 40.25	1.7577	4 30 41.2	13.727	1	13 43 25.91	1.8118	9 54 37.1	13.190
2	13 2 25.76	1.7592	4 44 24.5	13.714	2	13 45 14.72	1.8148	10 7 47.5	13.158
3	13 4 11.36	1.7608	4 58 6.9	13.700	3	13 47 3.70	1.8179	10 20 56.0	13.125
4	13 5 57.06	1.7624	5 11 48.4	13.685	4	13 48 52.87	1.8211	10 34 2.4	13.090
5	13 7 42.86	1.7641	5 25 29.1	13.670	5	13 50 42.24	1.8244	10 47 6.7	13.055
6	13 9 28.76	1.7659	5 39 8.8	13.654	6	13 52 31.81	1.8278	11 0 8.9	13.019
7	13 11 14.77	1.7677	5 52 47.5	13.636	7	13 54 21.58	1.8311	11 13 8.9	12.981
8	13 13 0.90	1.7696	6 6 25.1	13.618	8	13 56 11.55	1.8344	11 26 6.7	12.943
9	13 14 47.13	1.7715	6 20 1.6	13.599	9	13 58 1.71	1.8378	11 39 2.1	12.904
10	13 16 33.48	1.7736	6 33 37.0	13.580	10	13 59 52.08	1.8414	11 51 55.2	12.865
11	13 18 19.97	1.7757	6 47 11.2	13.559	11	14 1 42.68	1.8451	12 4 45.9	12.824
12	13 20 6.58	1.7779	7 0 44.1	13.538	12	14 3 33.50	1.8488	12 17 34.1	12.783
13	13 21 53.32	1.7801	7 14 15.7	13.516	13	14 5 24.54	1.8525	12 30 19.8	12.741
14	13 23 40.20	1.7824	7 27 46.0	13.494	14	14 7 15.80	1.8562	12 43 3.0	12.697
15	13 25 27.22	1.7848	7 41 15.0	13.471	15	14 9 7.28	1.8599	12 55 43.5	12.653
16	13 27 14.38	1.7872	7 54 42.5	13.446	16	14 10 58.99	1.8638	13 8 21.3	12.608
17	13 29 1.69	1.7897	8 8 8.5	13.420	17	14 12 50.94	1.8677	13 20 56.4	12.562
18	13 30 49.15	1.7922	8 21 32.9	13.394	18	14 14 43.13	1.8717	13 33 28.7	12.514
19	13 32 36.76	1.7948	8 34 55.7	13.368	19	14 16 35.56	1.8758	13 45 58.1	12.466
20	13 34 24.54	1.7974	8 48 17.0	13.341	20	14 18 28.24	1.8798	13 58 24.7	12.418
21	13 36 12.47	1.8002	9 1 36.6	13.313	21	14 20 21.15	1.8839	14 10 48.3	12.368
22	13 38 0.57	1.8031	9 14 54.5	13.283	22	14 22 14.31	1.8882	14 23 8.9	12.318
23	13 39 48.85	1.8060	9 28 10.6	13.253	23	14 24 7.74	1.8925	14 35 26.5	12.266
24	13 41 37.29	1.8089	S. 9 41 24.8	13.222	24	14 26 1.42	1.8968	S. 14 47 40.9	12.214

PHASES OF THE MOON.

	d	h	m
○ Full Moon, ...	1	11	19.3
☾ Last Quarter, ...	9	10	20.4
● New Moon, ...	16	1	52.7
☽ First Quarter, ...	23	0	3.6

	d	h
☾ Perigee, ...	15	10.6
☾ Apogee, ...	28	3.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Pollux	W.	74° 49′ 0″	3070	76° 17′ 46″	3070	77° 46′ 32″	3069	79° 15′ 19″	3068
	Regulus	W.	38 26 36	3101	39 54 45	3098	41 22 57	3096	42 51 12	3094
	Antares	E.	61 52 57	3071	60 24 12	3071	58 55 27	3070	57 26 41	3069
	α Aquilæ	E.	109 0 16	4027	107 49 3	4010	106 37 33	3995	105 25 48	3980
2	Pollux	W.	86 39 37	3061	88 8 34	3060	89 37 33	3057	91 6 35	3056
	Regulus	W.	50 13 10	3081	51 41 43	3078	53 10 19	3075	54 38 59	3073
	Jupiter	W.	23 24 57	3030	24 54 32	3027	26 24 11	3024	27 53 54	3021
	Antares	E.	50 2 33	3064	48 33 39	3061	47 4 42	3060	45 35 43	3058
	α Aquilæ	E.	99 23 54	3926	98 11 1	3918	96 57 59	3910	95 44 49	3903
	Saturn	E.	113 54 5	3105	112 26 1	3103	110 57 55	3101	109 29 46	3098
3	Pollux	W.	98 32 27	3042	100 1 48	3039	101 31 13	3035	103 0 42	3032
	Regulus	W.	62 3 13	3056	63 32 16	3052	65 1 24	3049	66 30 36	3045
	Jupiter	W.	35 23 29	3005	36 53 36	3001	38 23 48	2997	39 54 4	2993
	Antares	E.	38 10 8	3046	36 40 52	3043	35 11 32	3040	33 42 9	3037
	α Aquilæ	E.	89 37 36	3883	88 23 59	3881	87 10 20	3879	85 56 39	3878
	Saturn	E.	102 8 10	3083	100 39 40	3079	99 11 5	3076	97 42 26	3072
4	Regulus	W.	73 57 53	3023	75 27 37	3018	76 57 27	3013	78 27 24	3008
	Jupiter	W.	47 26 40	2973	48 57 27	2967	50 28 21	2962	51 59 21	2957
	Spica	W.	19 59 56	3067	21 28 46	3055	22 57 51	3044	24 27 9	3034
	α Aquilæ	E.	79 48 24	3889	78 34 53	3894	77 21 27	3900	76 8 7	3907
	Saturn	E.	90 17 57	3051	88 48 47	3047	87 19 32	3041	85 50 10	3036
	Fomalhaut	E.	108 25 17	3208	106 59 17	3200	105 33 8	3193	104 6 50	3186
5	Regulus	W.	85 58 51	2978	87 29 31	2972	89 0 19	2965	90 31 16	2958
	Jupiter	W.	59 36 5	2928	61 7 48	2921	62 39 40	2914	64 11 41	2908
	Spica	W.	31 56 36	2989	33 27 2	2981	34 57 38	2973	36 28 25	2965
	α Aquilæ	E.	70 3 31	3957	68 51 9	3971	67 39 1	3987	66 27 9	4005
	Saturn	E.	78 21 39	3006	76 51 34	3000	75 21 21	2993	73 51 0	2986
	Fomalhaut	E.	96 53 7	3148	95 25 55	3140	93 58 34	3133	92 31 4	3125
	α Pegasi	E.	116 35 12	3420	115 13 18	3402	113 51 4	3386	112 28 31	3369
6	Regulus	W.	98 8 20	2919	99 40 15	2910	101 12 21	2901	102 44 38	2892
	Jupiter	W.	71 54 2	2869	73 27 0	2860	75 0 10	2852	76 33 31	2842
	Spica	W.	44 5 2	2920	45 36 56	2911	47 9 1	2901	48 41 19	2891
	α Aquilæ	E.	60 32 44	4124	59 23 5	4155	58 13 56	4188	57 5 19	4226
	Saturn	E.	66 16 59	2949	64 45 42	2940	63 14 14	2931	61 42 35	2923
	Fomalhaut	E.	85 11 16	3087	83 42 51	3080	82 14 17	3072	80 45 33	3065
	α Pegasi	E.	105 31 12	3294	104 6 53	3280	102 42 18	3266	101 17 27	3253
	Sun	E.	130 14 58	3270	128 50 12	3260	127 25 14	3251	126 0 5	3241
7	Jupiter	W.	84 23 20	2793	85 57 57	2782	87 32 48	2771	89 7 54	2760
	Spica	W.	56 26 2	2838	57 59 40	2828	59 33 32	2816	61 7 39	2804
	α Aquilæ	E.	51 32 16	4480	50 28 6	4548	49 24 56	4622	48 22 50	4704
	Saturn	E.	54 1 28	2876	52 28 38	2866	50 55 35	2855	49 22 18	2845
	Fomalhaut	E.	73 19 35	3027	71 49 56	3019	70 20 7	3012	68 50 9	3005
	α Pegasi	E.	94 9 25	3191	92 43 5	3178	91 16 30	3167	89 49 41	3156
	Sun	E.	118 51 11	3186	117 24 45	3173	115 58 4	3160	114 31 7	3148
8	Jupiter	W.	97 7 15	2699	98 43 56	2686	100 20 55	2673	101 58 11	2659
	Spica	W.	69 2 14	2741	70 37 59	2728	72 14 2	2714	73 50 23	2701
	Antares	W.	23 8 17	2745	24 43 57	2731	26 19 56	2716	27 56 15	2701
	Saturn	E.	41 32 28	2790	39 57 47	2779	38 22 52	2769	36 47 43	2757

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Pollux	W.	80° 44′ 8″	3067	82° 12′ 58″	3066	83° 41′ 49″	3065	85° 10′ 42″	3063
	Regulus	W.	44 19 29	3091	45 47 49	3088	47 16 13	3086	48 44 40	3083
	Antares	E.	55 57 54	3069	54 29 6	3067	53 0 16	3066	51 31 25	3065
	α Aquilæ	E.	104 13 49	3967	103 1 37	3955	101 49 13	3944	100 36 38	3935
2	Pollux	W.	92 35 39	3053	94 4 46	3051	95 33 56	3047	97 3 10	3045
	Regulus	W.	56 7 42	3069	57 36 29	3066	59 5 20	3064	60 34 14	3060
	Jupiter	W.	29 23 41	3018	30 53 32	3014	32 23 27	3011	33 53 26	3008
	Antares	E.	44 6 42	3056	42 37 38	3053	41 8 31	3051	39 39 21	3048
	α Aquilæ	E.	94 31 32	3898	93 18 10	3893	92 4 43	3888	90 51 11	3885
	Saturn	E.	108 1 34	3095	106 33 18	3092	105 4 59	3089	103 36 36	3087
3	Pollux	W.	104 30 15	3028	105 59 53	3024	107 29 36	3020	108 59 24	3016
	Regulus	W.	67 59 53	3041	69 29 15	3037	70 58 42	3032	72 28 15	3028
	Jupiter	W.	41 24 25	2989	42 54 51	2985	44 25 22	2981	45 55 58	2977
	Antares	E.	32 12 42	3034	30 43 11	3030	29 13 36	3027	27 43 57	3023
	α Aquilæ	E.	84 42 57	3878	83 29 15	3880	82 15 35	3883	81 1 58	3886
	Saturn	E.	96 13 42	3068	94 44 53	3065	93 16 0	3060	91 47 1	3056
4	Regulus	W.	79 57 27	3002	81 27 37	2997	82 57 54	2990	84 28 19	2985
	Jupiter	W.	53 30 28	2951	55 1 42	2946	56 33 2	2940	58 4 30	2935
	Spica	W.	25 56 40	3025	27 26 22	3015	28 56 16	3006	30 26 21	2998
	α Aquilæ	E.	74 54 54	3915	73 41 49	3922	72 28 52	3933	71 16 6	3944
	Saturn	E.	84 20 42	3030	82 51 7	3025	81 21 25	3019	79 51 36	3013
	Fomalhaut	E.	102 40 24	3178	101 13 49	3170	99 47 4	3163	98 20 10	3155
5	Regulus	W.	92 2 22	2950	93 33 37	2943	95 5 1	2935	96 36 35	2927
	Jupiter	W.	65 43 50	2901	67 16 8	2893	68 48 36	2885	70 21 14	2877
	Spica	W.	37 59 22	2956	39 30 30	2947	41 1 49	2938	42 33 20	2929
	α Aquilæ	E.	65 15 34	4024	64 4 18	4045	62 53 23	4069	61 42 51	4095
	Saturn	E.	72 20 30	2979	70 49 51	2972	69 19 3	2965	67 48 6	2957
	Fomalhaut	E.	91 3 25	3118	89 35 37	3110	88 7 39	3102	86 39 32	3095
	α Pegasi	E.	111 5 39	3353	109 42 29	3338	108 19 1	3322	106 55 15	3307
6	Regulus	W.	104 17 7	2883	105 49 48	2873	107 22 41	2864	108 55 46	2855
	Jupiter	W.	78 7 4	2833	79 40 49	2824	81 14 46	2814	82 48 56	2803
	Spica	W.	50 13 49	2881	51 46 32	2871	53 19 28	2860	54 52 38	2849
	α Aquilæ	E.	55 57 17	4267	54 49 54	4314	53 43 14	4364	52 37 20	4419
	Saturn	E.	60 10 45	2914	58 38 44	2905	57 6 31	2895	55 34 6	2885
	Fomalhaut	E.	79 16 40	3057	77 47 38	3049	76 18 26	3042	74 49 5	3034
	α Pegasi	E.	99 52 21	3241	98 27 0	3227	97 1 23	3214	95 35 31	3203
	Sun	E.	124 34 44	3230	123 9 10	3220	121 43 24	3208	120 17 24	3197
7	Jupiter	W.	90 43 15	2748	92 18 51	2736	93 54 43	2724	95 30 51	2712
	Spica	W.	62 42 2	2792	64 16 40	2779	65 51 35	2767	67 26 46	2754
	α Aquilæ	E.	47 21 54	4795	46 22 14	4896	45 23 56	5008	44 27 7	5133
	Saturn	E.	47 48 48	2834	46 15 4	2823	44 41 6	2812	43 6 54	2801
	Fomalhaut	E.	67 20 3	2998	65 49 48	2992	64 19 25	2985	62 48 54	2979
	α Pegasi	E.	88 22 39	3144	86 55 23	3133	85 27 54	3123	84 0 12	3112
	Sun	E.	113 3 55	3135	111 36 28	3122	110 8 45	3108	108 40 45	3095
8	Jupiter	W.	103 35 46	2646	105 13 39	2632	106 51 51	2618	108 30 22	2603
	Spica	W.	75 27 2	2687	77 4 0	2672	78 41 18	2657	80 18 55	2643
	Antares	W.	29 32 53	2687	31 9 51	2672	32 47 9	2656	34 24 48	2641
	Saturn	E.	35 12 19	2747	33 36 41	2737	32 0 50	2726	30 24 45	2717

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Fomalhaut	E.	61° 18′ 15″	2973	59° 47′ 29″	2969	58° 16′ 37″	2964	56° 45′ 39″	2959
	α Pegasi	E.	82 32 17	3102	81 4 10	3091	79 35 50	3082	78 7 19	3073
	Sun	E.	107 12 29	3081	105 43 56	3066	104 15 5	3052	102 45 56	3037
9	Spica	W.	81 56 52	2628	83 35 9	2612	85 13 47	2597	86 52 46	2581
	Antares	W.	36 2 47	2626	37 41 7	2610	39 19 48	2595	40 58 50	2579
	Saturn	E.	28 48 28	2708	27 11 59	2701	25 35 20	2694	23 58 32	2689
	Fomalhaut	E.	49 9 51	2953	47 38 39	2956	46 7 31	2961	44 36 29	2967
	α Pegasi	E.	70 42 5	3034	69 12 35	3028	67 42 57	3022	66 13 12	3018
	Sun	E.	95 15 27	2958	93 44 21	2942	92 12 55	2925	90 41 8	2908
10	Spica	W.	95 13 9	2500	96 54 22	2485	98 35 57	2468	100 17 55	2451
	Antares	W.	49 19 34	2497	51 0 51	2480	52 42 32	2463	54 24 37	2447
	Fomalhaut	E.	37 4 40	3051	35 35 30	3083	34 7 0	3122	32 39 17	3169
	α Pegasi	E.	58 43 33	3014	57 13 37	3018	55 43 46	3023	54 14 2	3030
	Sun	E.	82 56 42	2821	81 22 41	2803	79 48 17	2785	78 13 29	2767
11	Antares	W.	63 0 59	2362	64 45 28	2345	66 30 22	2328	68 15 40	2312
	α Pegasi	E.	46 49 0	3119	45 21 13	3149	43 54 3	3186	42 27 37	3229
	Sun	E.	70 13 32	2676	68 36 20	2658	66 58 44	2640	65 20 43	2622
12	Antares	W.	77 8 12	2231	78 55 54	2215	80 43 59	2200	82 32 27	2184
	α Aquilæ	W.	42 6 1	4861	43 4 47	4665	44 6 16	4489	45 10 18	4329
	Sun	E.	57 4 37	2535	55 24 13	2518	53 43 25	2502	52 2 14	2486
13	Antares	W.	91 40 17	2115	93 30 53	2102	95 21 49	2090	97 13 3	2079
	α Aquilæ	W.	51 3 50	3718	52 20 18	3625	53 38 25	3541	54 58 4	3464
	Saturn	W.	27 17 35	2195	29 6 10	2176	30 55 14	2159	32 44 44	2142
	Sun	E.	43 30 52	2411	41 47 33	2398	40 3 55	2385	38 19 59	2373
14	α Aquilæ	W.	61 55 50	3165	63 22 41	3119	64 50 27	3078	66 19 3	3041
	Saturn	W.	41 58 0	2076	43 49 36	2066	45 41 28	2056	47 33 35	2048
	Sun	E.	29 36 7	2320	27 50 37	2311	26 4 54	2304	24 19 0	2298
18	Sun	W.	26 52 13	2435	28 34 58	2450	30 17 22	2466	31 59 23	2482
	Pollux	E.	56 25 29	2137	54 35 26	2152	52 45 46	2167	50 56 29	2182
	Regulus	E.	92 59 0	2148	91 9 14	2162	89 19 49	2177	87 30 47	2193
	Jupiter	E.	118 2 33	2113	116 11 54	2127	114 21 36	2142	112 31 41	2157
19	Sun	W.	40 23 34	2571	42 3 9	2589	43 42 19	2608	45 21 3	2628
	Pollux	E.	41 56 6	2267	40 9 18	2285	38 22 56	2302	36 37 0	2321
	Regulus	E.	78 31 40	2277	76 45 6	2296	74 58 59	2313	73 13 18	2331
	Jupiter	E.	103 28 6	2240	101 40 38	2258	99 53 36	2276	98 7 1	2294
20	Sun	W.	53 28 3	2727	55 4 7	2747	56 39 45	2768	58 14 55	2788
	Aldebaran	W.	18 9 59	2887	19 42 34	2833	21 16 19	2793	22 50 56	2766
	Pollux	E.	27 54 10	2417	26 10 59	2437	24 28 17	2457	22 46 3	2477
	Regulus	E.	64 31 36	2426	62 48 38	2445	61 6 7	2464	59 24 3	2484
	Jupiter	E.	89 20 45	2386	87 36 50	2405	85 53 23	2424	84 10 23	2443
21	Sun	W.	66 4 12	2888	67 36 46	2909	69 8 54	2928	70 40 37	2947
	Aldebaran	W.	30 49 35	2730	32 25 35	2734	34 1 30	2739	35 37 18	2746
	Regulus	E.	51 0 35	2582	49 21 15	2601	47 42 21	2621	46 3 54	2640
	Jupiter	E.	75 42 0	2536	74 1 37	2555	72 21 40	2574	70 42 9	2592
	Spica	E.	105 1 24	2567	103 21 44	2585	101 42 29	2603	100 3 38	2621

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8	Fomalhaut	E.	55° 14′ 35″	2956	53° 43′ 27″	2954	52° 12′ 16″	2953	50° 41′ 4′	2952
	α Pegasi	E.	76 38 37	3065	75 9 44	3056	73 40 40	3048	72 11 27	3041
	Sun	E.	101 16 29	3022	99 46 43	3005	98 16 37	2990	96 46 12	2974
9	Spica	W.	88 32 7	2565	90 11 50	2550	91 51 54	2534	93 32 20	2517
	Antares	W.	42 38 14	2563	44 18 0	2546	45 58 9	2530	47 38 40	2514
	Saturn	E.	22 21 37	2687	20 44 40	2690	19 7 47	2697	17 31 3	2709
	Fomalhaut	E.	43 5 35	2977	41 34 53	2989	40 4 27	3005	38 34 21	3026
	α Pegasi	E.	64 43 22	3015	63 13 28	3012	61 43 30	3011	60 13 31	3012
	Sun	E.	89 8 59	2891	87 36 28	2873	86 3 35	2856	84 30 20	2838
10	Spica	W.	102 0 17	2434	103 43 3	2418	105 26 12	2401	107 9 45	2384
	Antares	W.	56 7 5	2430	57 49 57	2413	59 33 13	2396	61 16 54	2379
	Fomalhaut	E.	31 12 31	3228	29 46 55	3301	28 22 45	3391	27 0 18	3501
	α Pegasi	E.	52 44 27	3041	51 15 5	3056	49 46 1	3073	48 17 18	3093
	Sun	E.	76 38 18	2749	75 2 43	2730	73 26 43	2713	71 50 20	2694
11	Antares	W.	70 1 22	2296	71 47 28	2279	73 33 59	2262	75 20 54	2247
	α Pegasi	E.	41 2 2	3261	39 37 28	3342	38 14 5	3414	36 52 4	3499
	Sun	E.	63 42 18	2604	62 3 28	2587	60 24 15	2569	58 44 38	2552
12	Antares	W.	84 21 18	2170	86 10 31	2156	88 0 5	2141	89 50 1	2128
	α Aquilæ	W.	46 16 44	4182	47 25 27	4050	48 36 17	3929	49 49 7	3819
	Sun	E.	50 20 41	2470	48 38 46	2455	46 56 29	2440	45 13 51	2425
13	Antares	W.	99 4 35	2068	100 56 24	2057	102 48 30	2047	104 40 51	2039
	α Aquilæ	W.	56 19 8	3393	57 41 32	3328	59 5 11	3269	60 29 59	3215
	Saturn	W.	34 34 39	2126	36 24 58	2112	38 15 39	2099	40 6 40	2086
	Sun	E.	36 35 45	2361	34 51 14	2349	33 6 26	2339	31 21 24	2329
14	α Aquilæ	W.	67 48 25	3007	69 18 29	2977	70 49 10	2950	72 20 26	2926
	Saturn	W.	49 25 55	2041	51 18 26	2034	53 11 7	2028	55 3 57	2024
	Sun	E.	22 32 57	2291	20 46 45	2286	19 0 25	2283	17 14 0	2279
18	Sun	W.	33 41 2	2499	35 22 17	2517	37 3 7	2534	38 43 33	2552
	Pollux	E.	49 7 35	2198	47 19 5	2215	45 31 0	2232	43 43 20	2249
	Regulus	E.	85 42 9	2209	83 53 55	2225	82 6 5	2242	80 18 40	2259
	Jupiter	E.	110 42 9	2173	108 53 1	2190	107 4 18	2206	105 15 59	2223
19	Sun	W.	46 59 20	2647	48 37 11	2667	50 14 35	2687	51 51 32	2707
	Pollux	E.	34 51 31	2340	33 6 30	2359	31 21 56	2378	29 37 49	2397
	Regulus	E.	71 28 3	2349	69 43 15	2368	67 58 55	2387	66 15 2	2406
	Jupiter	E.	96 20 52	2312	94 35 10	2331	92 49 55	2349	91 5 7	2367
20	Sun	W.	59 49 39	2808	61 23 57	2828	62 57 48	2848	64 31 13	2869
	Aldebaran	W.	24 26 9	2748	26 1 45	2737	27 37 36	2732	29 13 34	2729
	Pollux	E.	21 4 18	2498	19 23 2	2520	17 42 16	2541	16 2 0	2564
	Regulus	E.	57 42 27	2503	56 1 18	2522	54 20 36	2543	52 40 22	2562
	Jupiter	E.	82 27 49	2462	80 45 42	2481	79 4 2	2499	77 22 48	2518
21	Sun	W.	72 11 56	2966	73 42 51	2985	75 13 22	3004	76 43 30	3023
	Aldebaran	W.	37 12 57	2754	38 48 25	2763	40 23 41	2774	41 58 43	2784
	Regulus	E.	44 25 53	2659	42 48 18	2679	41 11 10	2698	39 34 28	2717
	Jupiter	E.	69 3 3	2610	67 24 21	2627	65 46 3	2645	64 8 9	2662
	Spica	E.	98 25 12	2639	96 47 10	2657	95 9 32	2674	93 32 17	2692

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22	Sun	W.	78° 13′ 14″	3041	79° 42′ 36″	3059	81° 11′ 36″	3077	82° 40′ 14″	3095
	Aldebaran	W.	43 33 32	2795	45 8 6	2807	46 42 25	2819	48 16 28	2831
	Regulus	E.	37 58 11	2737	36 22 20	2756	34 46 55	2776	33 11 56	2796
	Jupiter	E.	62 30 38	2679	60 53 30	2695	59 16 44	2713	57 40 21	2729
	Spica	E.	91 55 26	2709	90 18 58	2725	88 42 51	2741	87 7 6	2757
23	Sun	W.	89 58 16	3175	91 24 55	3191	92 51 15	3204	94 17 19	3220
	Aldebaran	W.	56 2 52	2891	57 35 23	2902	59 7 39	2914	60 39 40	2925
	Jupiter	E.	49 43 37	2805	48 9 15	2819	46 35 12	2833	45 1 27	2847
	Spica	E.	79 13 29	2833	77 39 44	2847	76 6 17	2860	74 33 7	2873
24	Sun	W.	101 23 32	3283	102 48 2	3295	104 12 19	3307	105 36 22	3318
	Aldebaran	W.	68 16 17	2978	69 46 57	2988	71 17 25	2997	72 47 41	3007
	Pollux	W.	23 59 23	2935	25 30 58	2945	27 2 20	2954	28 33 30	2964
	Jupiter	E.	37 16 55	2909	35 44 47	2920	34 12 54	2932	32 41 16	2943
	Spica	E.	66 51 24	2935	65 19 49	2946	63 48 28	2956	62 17 20	2966
	Antares	E.	112 43 49	2927	111 12 5	2939	109 40 35	2950	108 9 19	2960
25	Sun	W.	112 33 42	3365	113 56 39	3373	115 19 26	3380	116 42 5	3388
	Aldebaran	W.	80 16 18	3047	81 45 32	3054	83 14 38	3061	84 43 35	3067
	Pollux	W.	36 6 34	3005	37 36 41	3012	39 6 39	3018	40 36 29	3026
	Spica	E.	54 44 43	3012	53 14 45	3019	51 44 56	3026	50 15 16	3034
	Antares	E.	100 35 54	3002	99 5 44	3009	97 35 43	3017	96 5 51	3024
26	Sun	W.	123 33 26	3417	124 55 23	3422	126 17 15	3426	127 39 2	3430
	Aldebaran	W.	92 6 33	3094	93 34 50	3099	95 3 1	3103	96 31 7	3106
	Pollux	W.	48 3 47	3052	49 32 56	3056	51 2 0	3059	52 31 0	3063
	Spica	E.	42 49 1	3065	41 20 8	3069	39 51 21	3075	38 22 41	3079
	Antares	E.	88 38 26	3051	87 9 16	3055	85 40 11	3059	84 11 11	3062
27	Aldebaran	W.	103 50 37	3121	105 18 21	3123	106 46 3	3125	108 13 42	3127
	Pollux	W.	59 55 3	3074	61 23 44	3076	62 52 23	3077	64 21 1	3078
	Regulus	W.	23 43 6	3149	25 10 16	3143	26 37 34	3138	28 4 58	3133
	Spica	E.	31 0 40	3101	29 32 31	3105	28 4 27	3109	26 36 28	3114
	Antares	E.	76 47 5	3074	75 18 24	3076	73 49 45	3077	72 21 7	3078
28	Pollux	W.	71 44 5	3077	73 12 43	3076	74 41 22	3074	76 10 3	3073
	Regulus	W.	35 23 21	3113	36 51 15	3110	38 19 13	3105	39 47 16	3102
	Antares	E.	64 58 7	3078	63 29 30	3076	62 0 51	3075	60 32 11	3074
	α Aquilæ	E.	111 26 56	4074	110 16 29	4054	109 5 43	4035	107 54 38	4018
29	Pollux	W.	83 34 1	3062	85 2 57	3059	86 31 57	3056	88 1 0	3052
	Regulus	W.	47 8 34	3084	48 37 3	3080	50 5 37	3076	51 34 16	3072
	Jupiter	W.	22 48 28	3058	24 17 29	3053	25 46 36	3048	27 15 49	3044
	Antares	E.	53 8 22	3064	51 39 28	3060	50 10 30	3057	48 41 28	3055
	α Aquilæ	E.	101 55 15	3945	100 42 41	3934	99 29 56	3923	98 17 0	3914
	Saturn	E.	118 35 52	3093	117 7 34	3090	115 39 12	3086	114 10 45	3082
30	Pollux	W.	95 27 23	3034	96 56 54	3030	98 26 30	3025	99 56 12	3020
	Regulus	W.	58 58 50	3050	60 28 1	3044	61 57 19	3039	63 26 43	3034
	Jupiter	W.	34 43 16	3022	36 13 2	3016	37 42 55	3011	39 12 54	3006
	Antares	E.	41 15 22	3037	39 45 55	3032	38 16 22	3028	36 46 44	3024
	α Aquilæ	E.	92 10 7	3876	90 56 23	3872	89 42 35	3867	88 28 42	3863
	Saturn	E.	106 47 19	3061	105 18 22	3056	103 49 19	3052	102 20 11	3047

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22	Sun	W.	84° 8′ 30″	3111	85° 36′ 26″	3128	87° 4′ 2″	3143	88° 31′ 19″	3160
	Aldebaran	W.	49 50 16	2843	51 23 48	2855	52 57 5	2867	54 30 6	2879
	Regulus	E.	31 37 23	2816	30 3 16	2837	28 29 36	2857	26 56 22	2878
	Jupiter	E.	56 4 19	2744	54 28 38	2760	52 53 18	2775	51 18 18	2790
	Spica	E.	85 31 42	2773	83 56 39	2788	82 21 56	2804	80 47 33	2818
23	Sun	W.	95 43 5	3233	97 8 35	3247	98 33 49	3259	99 58 48	3272
	Aldebaran	W.	62 11 27	2936	63 43 0	2947	65 14 19	2958	66 45 24	2968
	Jupiter	E.	43 28 0	2860	41 54 50	2873	40 21 56	2885	38 49 18	2697
	Spica	E.	73 0 14	2887	71 27 38	2899	69 55 18	2912	68 23 14	2923
24	Sun	W.	107 0 13	3328	108 23 52	3338	109 47 19	3347	111 10 36	3357
	Aldebaran	W.	74 17 45	3015	75 47 39	3024	77 17 22	3032	78 46 55	3040
	Pollux	W.	30 4 28	2973	31 35 15	2981	33 5 52	2989	34 36 18	2997
	Jupiter	E.	31 9 52	2354	29 38 41	2963	28 7 42	2973	26 36 56	2983
	Spica	E.	60 46 25	2976	59 15 42	2985	57 45 11	2994	56 14 51	3004
	Antares	E.	106 38 16	2969	105 7 24	2977	103 36 43	2986	102 6 13	2995
25	Sun	W.	118 4 35	3394	119 26 58	3400	120 49 14	3407	122 11 23	3412
	Aldebaran	W.	86 12 25	3073	87 41 7	3079	89 9 42	3084	90 38 11	3090
	Pollux	W.	42 6 10	3031	43 35 44	3037	45 5 11	3042	46 34 32	3047
	Spica	E.	48 45 45	3040	47 16 22	3047	45 47 8	3053	44 18 1	3059
	Antares	E.	94 36 8	3030	93 6 33	3035	91 37 4	3041	90 7 42	3046
26	Sun	W.	129 0 45	3433	130 22 24	3436	131 44 0	3438	133 5 33	3441
	Aldebaran	W.	97 59 9	3110	99 27 6	3113	100 55 0	3116	102 22 50	3119
	Pollux	W.	53 59 55	3065	55 28 47	3069	56 57 35	3071	58 26 20	3073
	Spica	E.	36 54 6	3084	35 25 37	3088	33 57 13	3092	32 28 54	3096
	Antares	E.	82 42 15	3065	81 13 23	3068	79 44 34	3070	78 15 48	3073
27	Aldebaran	W.	109 41 19	3129	111 8 54	3129	112 36 28	3130	114 4 1	3131
	Pollux	W.	65 49 38	3078	67 18 15	3078	68 46 51	3078	70 15 28	3078
	Regulus	W.	29 32 28	3128	31 0 4	3124	32 27 45	3119	33 55 31	3116
	Spica	E.	25 8 35	3119	23 40 48	3124	22 13 7	3130	20 45 34	3136
	Antares	E.	70 52 31	3078	69 23 55	3078	67 55 19	3078	66 26 43	3078
28	Pollux	W.	77 38 46	3071	79 7 31	3069	80 36 18	3067	82 5 8	3065
	Regulus	W.	41 15 23	3099	42 43 34	3095	44 11 50	3091	45 40 10	3088
	Antares	E.	59 3 30	3073	57 34 47	3070	56 6 1	3069	54 37 13	3066
	α Aquilæ	E.	106 43 16	4002	105 31 38	3985	104 19 44	3971	103 7 36	3958
29	Pollux	W.	89 30 8	3049	90 59 20	3046	92 28 36	3042	93 57 57	3038
	Regulus	W.	53 3 0	3067	54 31 50	3063	56 0 45	3059	57 29 45	3055
	Jupiter	W.	28 45 7	3039	30 14 31	3035	31 44 0	3030	33 13 35	3026
	Antares	E.	47 12 23	3052	45 43 14	3048	44 14 1	3045	42 44 44	3041
	α Aquilæ	E.	97 3 54	3905	95 50 39	3897	94 37 16	3889	93 23 45	3882
	Saturn	E.	112 42 14	3078	111 13 38	3074	109 44 57	3070	108 16 11	3065
30	Pollux	W.	101 26 0	3016	102 55 53	3011	104 25 52	3005	105 55 58	3000
	Regulus	W.	64 56 13	3030	66 25 49	3024	67 55 32	3019	69 25 21	3014
	Jupiter	W.	40 42 59	3001	42 13 10	2996	43 43 28	2991	45 13 52	2986
	Antares	E.	35 17 1	3020	33 47 13	3015	32 17 19	3011	30 47 20	3007
	α Aquilæ	E.	87 14 45	3860	86 0 45	3858	84 46 43	3858	83 32 41	3858
	Saturn	E.	100 50 56	3042	99 21 35	3037	97 52 8	3031	96 22 34	3026

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	2 33 55.39	9.537	N.15 6 37.5	+45.29	15 54.18	66.06	3 2.77	0.318
Sat.	2	2 37 44.58	9.560	15 24 37.1	44.67	15 53.95	66.14	3 10.13	0.295
Sun.	3	2 41 34.32	9.583	15 42 21.4	44.02	15 53.71	66.22	3 16.93	0.272
Mon.	4	2 45 24.60	9.607	15 59 50.0	43.37	15 53.48	66.30	3 23.17	0.248
Tues.	5	2 49 15.46	9.631	16 17 2.9	42.71	15 53.25	66.38	3 28.83	0.224
Wed.	6	2 53 6.90	9.655	16 33 59.7	42.03	15 53.02	66.46	3 33.95	0.200
Thur.	7	2 56 58.91	9.680	16 50 40.3	41.34	15 52.79	66.54	3 38.47	0.176
Frid.	8	3 0 51.52	9.705	17 7 4.4	40.64	15 52.57	66.63	3 42.41	0.151
Sat.	9	3 4 44.73	9.730	17 23 11.3	39.93	15 52.35	66.71	3 45.76	0.126
Sun.	10	3 8 38.52	9.755	17 39 0.9	39.20	15 52.13	66.79	3 48.51	0.101
Mon.	11	3 12 32.91	9.780	17 54 32.7	38.46	15 51.91	66.87	3 50.67	0.076
Tues.	12	3 16 27.89	9.804	18 9 46.7	37.71	15 51.70	66.96	3 52.24	0.052
Wed.	13	3 20 23.46	9.828	18 24 42.7	36.94	15 51.49	67.04	3 53.22	0.028
Thur.	14	3 24 19.62	9.852	18 39 20.2	36.16	15 51.29	67.12	3 53.62	+0.004
Frid.	15	3 28 16.37	9.876	18 53 38.8	35.37	15 51.09	67.20	3 53.44	−0.020
Sat.	16	3 32 13.69	9.899	19 7 38.3	34.58	15 50.90	67.28	3 52.68	0.043
Sun.	17	3 36 11.57	9.922	19 21 18.4	33.76	15 50.71	67.36	3 51.36	0.066
Mon.	18	3 40 10.01	9.945	19 34 38.8	32.93	15 50.53	67.44	3 49.48	0.089
Tues.	19	3 44 8.99	9.968	19 47 39.2	32.09	15 50.35	67.52	3 47.05	0.112
Wed.	20	3 48 8.52	9.991	20 0 19.3	31.25	15 50.17	67.60	3 44 08	0.135
Thur.	21	3 52 8.59	10.014	20 12 38.8	30.38	15 50.00	67.68	3 40.58	0.158
Frid.	22	3 56 9.18	10.036	20 24 37.6	29.51	15 49.83	67.75	3 36.56	0.179
Sat.	23	4 0 10.27	10.057	20 36 15.4	28.62	15 49.66	67.83	3 32.04	0.200
Sun.	24	4 4 11.86	10.078	20 47 32.0	27.73	15 49.50	67.90	3 27.02	0.221
Mon.	25	4 8 13.94	10.098	20 58 27.1	26.83	15 49.34	67.97	3 21.50	0.241
Tues.	26	4 12 16.52	10.117	21 9 0.5	25.93	15 49.19	68.04	3 15.50	0.260
Wed.	27	4 16 19.56	10.136	21 19 11.9	25.01	15 49.04	68.11	3 9.04	0.279
Thur.	28	4 20 23.05	10.155	21 29 1.3	24.09	15 48.89	68.18	3 2.13	0.298
Frid.	29	4 24 26.99	10.174	21 38 28.5	23.16	15 48.74	68.24	2 54.76	0.317
Sat.	30	4 28 31.39	10.192	21 47 33.2	22.22	15 48.60	68.30	2 46.94	0.335
Sun.	31	4 32 36.23	10.210	21 56 15.1	21.28	15 48.46	68.36	2 38.69	0.353
Mon.	32	4 36 41.49	10.227	N.22 4 34.3	+20.32	15 48.32	68.42	2 30.01	0.370

Note.—Mean Time of the Semidiameter passing may be found by subtracting $0^s.18$ from the Sidereal Time.
+ prefixed to the hourly change of declination, indicates that north declinations are increasing, and south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	2 33 55.85	9.538	N.15 6 39.8	+45.29	3 2.79	0.318	2 36 58.64
Sat.	2	2 37 45.05	9.561	15 24 39.4	44.67	3 10.15	0.295	2 40 55.20
Sun.	3	2 41 34.81	9.584	15 42 23.7	44.02	3 16.94	0.272	2 44 51.75
Mon.	4	2 45 25.13	9.608	15 59 52.4	43.37	3 23.18	0.248	2 48 48.31
Tues.	5	2 49 16.01	9.632	16 17 5.3	42.71	3 28.85	0.224	2 52 44.86
Wed.	6	2 53 7.46	9.656	16 34 2.2	42.02	3 33.96	0.200	2 56 41.42
Thur.	7	2 56 59.49	9.680	16 50 42.8	41.34	3 38.48	0.176	3 0 37.97
Frid.	8	3 0 52.11	9.705	17 7 6.8	40.64	3 42.42	0.151	3 4 34.53
Sat.	9	3 4 45.32	9.730	17 23 13.7	39.93	3 45.77	0.126	3 8 31.09
Sun.	10	3 8 39.13	9.755	17 39 3.3	39.20	3 48.52	0.101	3 12 27.65
Mon.	11	3 12 33.53	9.780	17 54 35.2	38.46	3 50.67	0.076	3 16 24.20
Tues.	12	3 16 28.52	9.804	18 9 49.2	37.71	3 52.24	0.052	3 20 20.76
Wed.	13	3 20 24.09	9.828	18 24 45.1	36.94	3 53.22	0.028	3 24 17.31
Thur.	14	3 24 20.25	9.852	18 39 22.5	36.16	3 53.62	+0.004	3 28 13.87
Frid.	15	3 28 17.00	9.876	18 53 41.0	35.37	3 53.43	−0.020	3 32 10.43
Sat.	16	3 32 14.32	9.899	19 7 40.5	34.58	3 52.67	0.043	3 36 6.99
Sun.	17	3 36 12.20	9.922	19 21 20.6	33.76	3 51.34	0.066	3 40 3.54
Mon.	18	3 40 10.64	9.945	19 34 40.9	32.93	3 49.46	0.089	3 44 0.10
Tues.	19	3 44 9.62	9.968	19 47 41.2	32.09	3 47.04	0.112	3 47 56.66
Wed.	20	3 48 9.14	9.991	20 0 21.2	31.25	3 44.08	0.135	3 51 53.22
Thur.	21	3 52 9.20	10.013	20 12 40.7	30.38	3 40.57	0.158	3 55 49.77
Frid.	22	3 56 9.78	10.035	20 24 39.4	29.51	3 36.55	0.179	3 59 46.33
Sat.	23	4 0 10.86	10.056	20 36 17.1	28.62	3 32.03	0.200	4 3 42.89
Sun.	24	4 4 12.44	10.077	20 47 33.6	27.73	3 27.01	0.221	4 7 39.45
Mon.	25	4 8 14.51	10.097	20 58 28.6	26.83	3 21.49	0.241	4 11 36.00
Tues.	26	4 12 17.07	10.116	21 9 1.9	25.93	3 15.49	0.260	4 15 32.56
Wed.	27	4 16 20.10	10.135	21 19 13.3	25.01	3 9.02	0.279	4 19 29.12
Thur.	28	4 20 23.57	10.154	21 29 2.6	24.09	3 2.11	0.298	4 23 25.68
Frid.	29	4 24 27.49	10.173	21 38 29.6	23.16	2 54.74	0.317	4 27 22.23
Sat.	30	4 28 31.86	10.191	21 47 34.2	22.22	2 46.93	0.335	4 31 18.79
Sun.	31	4 32 36.68	10.209	21 56 16.1	21.28	2 38.67	0.353	4 35 15.35
Mon.	32	4 36 41.92	10.226	N.22 4 35.2	+20.32	2 29.99	0.370	4 39 11.91

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	121	40 54 59.4	54 54.4	145.37	−0.12	0.0035434	+44.7	21 19 31.16
2	122	41 53 7.4	53 1.8	145.30	0.25	.0036505	44.5	21 15 35.25
3	123	42 51 13.8	51 8.1	145.23	0.36	.0037571	44.3	21 11 39.34
4	124	43 49 18.6	49 12.7	145.17	0.47	.0038631	44.0	21 7 43.44
5	125	44 47 22.0	47 15.9	145.10	0.56	.0039685	43.7	21 3 47.53
6	126	45 45 24.0	45 17.8	145.04	0.62	.0040731	43.3	20 59 51.62
7	127	46 43 24.6	43 18.3	144.99	0.64	.0041767	42.9	20 55 55.70
8	128	47 41 23.8	41 17.3	144.94	0.65	.0042792	42.4	20 51 59.79
9	129	48 39 21.7	39 15.0	144.89	0.61	.0043804	41.8	20 48 3.88
10	130	49 37 18.3	37 11.4	144.83	0.56	.0044801	41.2	20 44 7.97
11	131	50 35 13.6	35 6.6	144.77	0.47	.0045783	40.5	20 40 12.06
12	132	51 33 7.6	33 0.5	144.72	0.37	.0046748	39.8	20 36 16.15
13	133	52 31 0.3	30 53.0	144.66	0.24	.0047696	39.1	20 32 20.24
14	134	53 28 51.8	28 44.3	144.61	−0.10	.0048626	38.3	20 28 24.33
15	135	54 26 41.8	26 34.1	144.55	+0.04	.0049536	37.5	20 24 28.41
16	136	55 24 30.5	24 22.7	144.50	0.17	.0050425	36.6	20 20 32.50
17	137	56 22 17.8	22 9.9	144.45	0.28	.0051293	35.7	20 16 36.59
18	138	57 20 3.6	19 55.5	144.38	0.38	.0052139	34.8	20 12 40.68
19	139	58 17 47.8	17 39.6	144.31	0.45	.0052963	34.0	20 8 44.76
20	140	59 15 30.5	15 22,0	144.25	0.49	.0053769	33.2	20 4 48.85
21	141	60 13 11.8	13 3.2	144.18	0.50	.0054557	32.3	20 0 52.94
22	142	61 10 51.5	10 42.7	144.12	0.48	.0055324	31.5	19 56 57.03
23	143	62 8 29.6	8 20.6	144.06	0.43	.0056073	30.8	19 53 1.11
24	144	63 6 6.2	5 57.0	144.00	0.36	.0056806	30.1	19 49 5.20
25	145	64 3 41.4	3 32.0	143.94	0.27	.0057524	29.5	19 45 9.29
26	146	65 1 15.1	1 5.6	143.88	0.15	.0058229	29.0	19 41 13.38
27	147	65 58 47.4	58 37.7	143.82	+0.02	.0058920	28.5	19 37 17.47
28	148	66 56 18.5	56 8.6	143.77	−0.12	.0059600	28.0	19 33 21.56
29	149	67 53 48.4	53 38.3	143.72	0.25	.0060267	27.5	19 29 25.65
30	150	68 51 17.2	51 6,8	143.68	0.37	.0060922	27.0	19 25 29.74
31	151	69 48 44.9	48 34.5	143.64	0.48	.0061565	26.5	19 21 33.82
32	152	70 46 11.6	46 1.0	143.60	−0.57	0.0062196	+26.0	19 17 37.91

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour. $-9^{s}.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 51.5	14 53.7	54 25.0	+0.65	54 33.4	+0.74	12 10.5	1.84	14.9
2	14 56.2	14 59.1	54 42.8	0.83	54 53.2	0.91	12 56.4	1.97	15.9
3	15 2.3	15 5.6	55 4.6	0.99	55 17.0	1.07	13 45.8	2.14	16.9
4	15 9.2	15 13.1	55 30.3	1.15	55 44.5	1.23	14 38.7	2.27	17.9
5	15 17.3	15 21.7	55 59.8	1.31	56 15.9	1.39	15 34.2	2.35	18.9
6	15 26.3	15 31.2	56 33.0	1.46	56 51.0	1.53	16 30.7	2.35	19.9
7	15 36.3	15 41.7	57 9.8	1.60	57 29.3	1.66	17 26.6	2.30	20.9
8	15 47.2	15 52.8	57 49.5	1.70	58 10.1	1.73	18 20.8	2.21	21.9
9	15 58.4	16 4.1	58 30.9	1.73	58 51.6	1.72	19 12.9	2.13	22.9
10	16 9.6	16 14.9	59 11.9	1.66	59 31.3	1.56	20 3.2	2.07	23.9
11	16 19.8	16 24.2	59 49.3	1.43	60 5.5	1.26	20 52.8	2.07	24.9
12	16 27.9	16 30.8	60 19.3	1.03	60 30.1	0.77	21 42.9	2.12	25.9
13	16 32.9	16 34.0	60 37.7	+0.48	60 41.6	+0.16	22 34.8	2.22	26.9
14	16 34.0	16 32.9	60 41.6	−0.17	60 37.4	−0.52	23 29.6	2.35	27.9
15	16 30.6	16 27.3	60 29.2	0.85	60 17.0	1.17	6		28.9
16	16 23.0	16 17.9	60 1.3	1.45	59 42.3	1.70	0 27.7	2.49	0.6
17	16 12.0	16 5.4	59 20.5	1.91	58 56.6	2.07	1 28.4	2.56	1.6
18	15 58.4	15 51.3	58 31.1	2.17	58 4.6	2.23	2 29.9	2.54	2.6
19	15 44.0	15 36.7	57 37.7	2.24	57 11.1	2.19	3 29.6	2.42	3.6
20	15 29.6	15 22.9	56 45.2	2.11	56 20.5	2.00	4 25.5	2.23	4.6
21	15 16.6	15 10.8	55 57.2	1.86	55 35.8.	1.70	5 16.7	2.04	5.6
22	15 5.5	15 0.9	55 16.5	1.52	54 59.4	1.32	6 3.4	1.86	6.6
23	14 56.9	14 53.6	54 44.8	1.12	54 32.6	0.91	6 46.4	1.73	7.6
24	14 50.9	14 48.9	54 22.9	0.70	54 15.7	0.50	7 26.9	1.65	8.6
25	14 47.6	14 47.0	54 10.9	−0.29	54 8.5	−0.10	8 6.1	1.62	9.6
26	14 47.0	14 47.6	54 8.5	+0.09	54 10.6	+0.26	8 45.2	1.64	10.6
27	14 48.7	14 50.3	54 14.7	0.42	54 20.7	0.57	9 25.1	1.70	11.6
28	14 52.4	14 54.9	54 28.3	0.70	54 37.4	0.81	10 7.2	1.81	12.6
29	14 57.7	15 0.8	54 47.8	0.91	54 59.2	1.00	10 52.2	1.95	13.6
30	15 4.2	15 7.8	55 11.6	1.07	55 24.8	1.12	11 40.8	2.11	14.6
31	15 11.5	15 15.4	55 38.6	1.17	55 52.8	1.20	12 33.2	2.26	15.6
32	15 19.3	15 23.3	56 7.3	+1.22	56 22.1	+1.24	13 28.7	2.36	16.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 26 1.42	1.8968	S. 14 47 40.9	12.214
1	14 27 55.36	1.9011	14 59 52.1	12.160
2	14 29 49.57	1.9055	15 12 0.1	12.105
3	14 31 44.03	1.9099	15 24 4.7	12.049
4	14 33 38.76	1.9145	15 36 5.9	11.992
5	14 35 33.78	1.9191	15 48 3.8	11.935
6	14 37 29.07	1.9237	15 59 58.2	11.876
7	14 39 24.63	1.9284	16 11 49.0	11.817
8	14 41 20.48	1.9331	16 23 36.2	11.756
9	14 43 16.61	1.9378	16 35 19.7	11.694
10	14 45 13.02	1.9426	16 46 59.5	11.631
11	14 47 9.73	1.9475	16 58 35.5	11.568
12	14 49 6.73	1.9524	17 10 7.7	11.503
13	14 51 4.02	1.9573	17 21 35.9	11.437
14	14 53 1.61	1.9623	17 33 0.2	11.370
15	14 54 59.50	1.9673	17 44 20.4	11.303
16	14 56 57.69	1.9723	17 55 36.5	11.234
17	14 58 56.19	1.9773	18 6 48.4	11.164
18	15 0 54.98	1.9825	18 17 56.1	11.093
19	15 2 54.08	1.9877	18 28 59.5	11.020
20	15 4 53.50	1.9929	18 39 58.5	10.947
21	15 6 53.24	1.9982	18 50 53.1	10.873
22	15 8 53.29	2.0034	19 1 43.2	10.798
23	15 10 53.66	2.0087	S. 19 12 28.8	10.722

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 12 54.34	2.0140	S. 19 23 9.8	10.644
1	15 14 55.34	2.0194	19 33 46.1	10.565
2	15 16 56.67	2.0249	19 44 17.6	10.485
3	15 18 58.33	2.0303	19 54 44.3	10.405
4	15 21 0.31	2.0357	20 5 6.1	10.323
5	15 23 2.62	2.0412	20 15 23.0	10.240
6	15 25 5.26	2.0468	20 25 34.9	10.156
7	15 27 8.23	2.0523	20 35 41.7	10.070
8	15 29 11.53	2.0579	20 45 43.3	9.984
9	15 31 15.17	2.0634	20 55 39.7	9.896
10	15 33 19.14	2.0690	21 5 30.8	9.808
11	15 35 23.45	2.0745	21 15 16.6	9.718
12	15 37 28.09	2.0801	21 24 57.0	9.627
13	15 39 33.07	2.0858	21 34 31.9	9.535
14	15 41 38.39	2.0915	21 44 1.2	9.442
15	15 43 44.05	2.0972	21 53 24.9	9.348
16	15 45 50.05	2.1029	22 2 42.9	9.253
17	15 47 56.39	2.1086	22 11 55.2	9.156
18	15 50 3.08	2.1143	22 21 1.7	9.059
19	15 52 10.11	2.1200	22 30 2.3	8.960
20	15 54 17.48	2.1257	22 38 56.9	8.860
21	15 56 25.19	2.1314	22 47 45.5	8.759
22	15 58 33.24	2.1371	22 56 28.0	8.656
23	16 0 41.64	2.1428	23 5 4.3	8.553
24	16 2 50.38	2.1485	S. 23 13 34.4	8.449

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 2 50.38	2.1485	S. 23 13 34.4	8.449
1	16 4 59.47	2.1542	23 21 58.2	8.344
2	16 7 8.90	2.1599	23 30 15.6	8.237
3	16 9 18.66	2.1656	23 38 26.6	8.129
4	16 11 28.77	2.1713	23 46 31.1	8.020
5	16 13 39.22	2.1769	23 54 29.1	7.910
6	16 15 50.00	2.1826	24 2 20.4	7.799
7	16 18 1.12	2.1883	24 10 5.0	7.687
8	16 20 12.58	2.1939	24 17 42.9	7.574
9	16 22 24.39	2.1995	24 25 13.9	7.459
10	16 24 36.53	2.2051	24 32 38.0	7.344
11	16 26 49.00	2.2106	24 39 55.2	7.227
12	16 29 1.80	2.2161	24 47 5.3	7.109
13	16 31 14.93	2.2216	24 54 8.3	6.990
14	16 33 28.39	2.2271	25 1 4.2	6.870
15	16 35 42.18	2.2326	25 7 52.8	6.749
16	16 37 56.30	2.2380	25 14 34.1	6.628
17	16 40 10.74	2.2434	25 21 8.1	6.506
18	16 42 25.50	2.2487	25 27 34.8	6.382
19	16 44 40.58	2.2540	25 33 54.0	6.256
20	16 46 55.98	2.2592	25 40 5.6	6.129
21	16 49 11.69	2.2644	25 46 9.5	6.001
22	16 51 27.71	2.2696	25 52 5.7	5.873
23	16 53 44.04	2.2747	S. 25 57 54.3	5.744

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 56 0.68	2.2798	S. 26 3 35.1	5.613
1	16 58 17.62	2.2848	26 9 8.0	5.482
2	17 0 34.86	2.2898	26 14 33.0	5.351
3	17 2 52.40	2.2947	26 19 50.1	5.218
4	17 5 10.23	2.2996	26 24 59.1	5.083
5	17 7 28.35	2.3044	26 30 0.0	4.947
6	17 9 46.76	2.3091	26 34 52.8	4.811
7	17 12 5.45	2.3138	26 39 37.4	4.674
8	17 14 24.42	2.3184	26 44 13.8	4.536
9	17 16 43.66	2.3229	26 48 41.8	4.397
10	17 19 3.17	2.3274	26 53 1.4	4.257
11	17 21 22.94	2.3318	26 57 12.7	4.117
12	17 23 42.98	2.3361	27 1 15.5	3.976
13	17 26 3.28	2.3403	27 5 9.8	3.833
14	17 28 23.83	2.3444	27 8 55.5	3.689
15	17 30 44.62	2.3485	27 12 32.5	3.545
16	17 33 5.65	2.3525	27 16 0.8	3.400
17	17 35 26.93	2.3565	27 19 20.5	3.255
18	17 37 48.44	2.3604	27 22 31.5	3.108
19	17 40 10.18	2.3641	27 25 33.6	2.961
20	17 42 32.14	2.3678	27 28 26.9	2.813
21	17 44 54.32	2.3714	27 31 11.2	2.664
22	17 47 16.71	2.3749	27 33 46.6	2.515
23	17 49 39.31	2.3784	27 36 13.0	2.365
24	17 52 2.12	2.3818	S. 27 38 30.4	2.214

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 5.					**THURSDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 52 2.12	2.3818	S.27 38 30.4	2.214	0	19 48 13.13	2.4190	S.26 23 23.2	5.395
1	17 54 25.12	2.3850	27 40 38.7	2.063	1	19 50 38.22	2.4173	26 17 54.8	5.552
2	17 56 48.31	2.3880	27 42 37.9	1.911	2	19 53 3.21	2.4155	26 12 17.0	5.709
3	17 59 11.68	2.3910	27 44 28.0	1.759	3	19 55 28.08	2.4136	26 6 29.8	5.865
4	18 1 35.23	2.3940	27 46 8.9	1.606	4	19 57 52.84	2.4117	26 0 33.2	6.020
5	18 3 58.96	2.3969	27 47 40.6	1.452	5	20 0 17.48	2.4097	25 54 27.3	6.175
6	18 6 22.86	2.3997	27 49 3.1	1.297	6	20 2 42.00	2.4076	25 48 12.2	6.330
7	18 8 46.92	2.4023	27 50 16.3	1.142	7	20 5 6.39	2.4055	25 41 47.8	6.484
8	18 11 11.13	2.4047	27 51 20.2	0.986	8	20 7 30.65	2.4033	25 35 14.2	6.638
9	18 13 35.48	2.4071	27 52 14.7	0.830	9	20 9 54.78	2.4010	25 28 31.3	6.791
10	18 15 59.98	2.4095	27 52 59.8	0.674	10	20 12 18.77	2.3986	25 21 39.2	6.943
11	18 18 24.62	2.4117	27 53 35.5	0.518	11	20 14 42.61	2.3961	25 14 38.1	7.095
12	18 20 49.39	2.4138	27 54 1.9	0.361	12	20 17 6.30	2.3936	25 7 27.9	7.246
13	18 23 14.28	2.4158	27 54 18.8	0.203	13	20 19 29.84	2.3910	25 0 8.6	7.397
14	18 25 39.29	2.4177	27 54 26.2	−0.045	14	20 21 53.23	2.3884	24 52 40.3	7.547
15	18 28 4.41	2.4195	27 54 24.1	+0.114	15	20 24 16.45	2.3857	24 45 3.0	7.696
16	18 30 29.63	2.4212	27 54 12.5	0.273	16	20 26 39.51	2.3830	24 37 16.7	7.844
17	18 32 54.95	2.4228	27 53 51.4	0.432	17	20 29 2.41	2.3802	24 29 21.6	7.992
18	18 35 20.36	2.4243	27 53 20.7	0.591	18	20 31 25.14	2.3774	24 21 17.8	8.139
19	18 37 45.86	2.4256	27 52 40.4	0.751	19	20 33 47.70	2.3746	24 13 5.1	8.285
20	18 40 11.44	2.4268	27 51 50.6	0.911	20	20 36 10.09	2.3716	24 4 43.6	8.430
21	18 42 37.08	2.4279	27 50 51.2	1.071	21	20 38 32.29	2.3686	23 56 13.4	8.575
22	18 45 2.79	2.4290	27 49 42.1	1.231	22	20 40 54.31	2.3655	23 47 34.5	8.719
23	18 47 28.56	2.4299	S.27 48 23.4	1.391	23	20 43 16.15	2.3625	S.23 38 47.0	8.862
	WEDNESDAY 6.					**FRIDAY 8.**			
0	18 49 54.38	2.4308	S.27 46 55.1	1.552	0	20 45 37.81	2.3594	S.23 29 51.0	9.004
1	18 52 20.25	2.4315	27 45 17.1	1.713	1	20 47 59.28	2.3563	23 20 46.5	9.146
2	18 54 46.16	2.4320	27 43 29.5	1.874	2	20 50 20.56	2.3531	23 11 33.5	9.287
3	18 57 12.09	2.4325	27 41 32.3	2.035	3	20 52 41.65	2.3499	23 2 12.1	9.427
4	18 59 38.05	2.4329	27 39 25.4	2.196	4	20 55 2.55	2.3467	22 52 42.3	9.565
5	19 2 4.03	2.4332	27 37 8.8	2.357	5	20 57 23.25	2.3434	22 43 4.3	9.703
6	19 4 30.03	2.4333	27 34 42.5	2.518	6	20 59 43.75	2.3401	22 33 18.0	9.840
7	19 6 56.03	2.4334	27 32 6.6	2.679	7	21 2 4.06	2.3368	22 23 23.5	9.976
8	19 9 22.03	2.4334	27 29 21.0	2.841	8	21 4 24.17	2.3334	22 13 20.9	10.111
9	19 11 48.03	2.4333	27 26 25.7	3.002	9	21 6 44.07	2.3300	22 3 10.2	10.245
10	19 14 14.02	2.4330	27 23 20.7	3.163	10	21 9 3.77	2.3267	21 52 51.5	10.378
11	19 16 39.99	2.4326	27 20 6.1	3.324	11	21 11 23.28	2.3234	21 42 24.8	10.510
12	19 19 5.93	2.4321	27 16 42.0	3.484	12	21 13 42.58	2.3200	21 31 50.2	10.641
13	19 21 31.84	2.4315	27 13 8.2	3.645	13	21 16 1.68	2.3166	21 21 7.8	10.772
14	19 23 57.71	2.4309	27 9 24.7	3.806	14	21 18 20.58	2.3131	21 10 17.6	10.901
15	19 26 23.54	2.4301	27 5 31.5	3.966	15	21 20 39.26	2.3097	20 59 19.7	11.029
16	19 28 49.32	2.4293	27 1 28.7	4.126	16	21 22 57.74	2.3063	20 48 14.1	11.156
17	19 31 15.05	2.4283	26 57 16.4	4.285	17	21 25 16.02	2.3029	20 37 0.9	11.282
18	19 33 40.72	2.4273	26 52 54.6	4.444	18	21 27 34.09	2.2995	20 25 40.2	11.407
19	19 36 6.32	2.4261	26 48 23.2	4.603	19	21 29 51.96	2.2961	20 14 12.0	11.531
20	19 38 31.85	2.4249	26 43 42.2	4.762	20	21 32 9.63	2.2927	20 2 36.4	11.654
21	19 40 57.30	2.4235	26 38 51.7	4.921	21	21 34 27.09	2.2893	19 50 53.5	11.775
22	19 43 22.67	2.4221	26 33 51.7	5.079	22	21 36 44.35	2.2859	19 39 3.3	11.896
23	19 45 47.95	2.4206	26 28 42.2	5.237	23	21 39 1.40	2.2825	19 27 5.9	12.016
24	19 48 13.13	2.4190	S.26 23 23.2	5.395	24	21 41 18.25	2.2792	S.19 15 1.4	12.134

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 41 18.25	2.2792	S. 19 15 1.4	12.134	0	23 27 29.31	2.1652	S. 7 39 23.0	16.343
1	21 43 34.90	2.2758	19 2 49.8	12.252	1	23 29 39.19	2.1643	7 23 0.8	16.396
2	21 45 51.35	2.2725	18 50 31.2	12.369	2	23 31 49.02	2.1634	7 6 35.5	16.448
3	21 48 7.61	2.2692	18 38 5.6	12.484	3	23 33 58.80	2.1626	6 50 7.1	16.498
4	21 50 23.67	2.2659	18 25 33.2	12.597	4	23 36 8.54	2.1620	6 33 35.7	16.548
5	21 52 39.53	2.2626	18 12 54.0	12.710	5	23 38 18.25	2.1615	6 17 1.4	16.596
6	21 54 55.18	2.2593	18 0 8.0	12.822	6	23 40 27.93	2.1610	6 0 24.3	16.641
7	21 57 10.64	2.2561	17 47 15.4	12.932	7	23 42 37.58	2.1606	5 43 44.5	16.686
8	21 59 25.91	2.2530	17 34 16.2	13.042	8	23 44 47.21	2.1603	5 27 2.0	16.729
9	22 1 41.00	2.2499	17 21 10.4	13.150	9	23 46 56.82	2.1601	5 10 17.0	16.770
10	22 3 55.90	2.2467	17 7 58.2	13.256	10	23 49 6.42	2.1599	4 53 29.6	16.810
11	22 6 10.61	2.2436	16 54 39.7	13.361	11	23 51 16.01	2.1598	4 36 39.8	16.849
12	22 8 25.13	2.2405	16 41 14.9	13.466	12	23 53 25.60	2.1598	4 19 47.8	16.885
13	22 10 39.47	2.2375	16 27 43.8	13.569	13	23 55 35.19	2.1598	4 2 53.7	16.920
14	22 12 53.63	2.2345	16 14 6.6	13.671	14	23 57 44.79	2.1600	3 45 57.5	16.954
15	22 15 7.61	2.2316	16 0 23.3	13.772	15	23 59 54.40	2.1603	3 28 59.3	16.985
16	22 17 21.42	2.2287	15 46 34.0	13.871	16	0 2 4.03	2.1607	3 11 59.3	17.014
17	22 19 35.06	2.2258	15 32 38.8	13.968	17	0 4 13.68	2.1611	2 54 57.6	17.043
18	22 21 48.52	2.2229	15 18 37.8	14.065	18	0 6 23.36	2.1615	2 37 54.2	17.070
19	22 24 1.81	2.2201	15 4 31.0	14.161	19	0 8 33.07	2.1621	2 20 49.2	17.095
20	22 26 14.94	2.2175	14 50 18.5	14.256	20	0 10 42.82	2.1628	2 3 42.8	17.119
21	22 28 27.92	2.2149	14 36 0.3	14.349	21	0 12 52.61	2.1636	1 46 35.0	17.141
22	22 30 40.74	2.2122	14 21 36.6	14.441	22	0 15 2.45	2.1644	1 29 25.9	17.161
23	22 32 53.39	2.2096	S. 14 7 7.5	14.531	23	0 17 12.34	2.1653	S. 1 12 15.7	17.179
	SUNDAY 10.					TUESDAY 12.			
0	22 35 5.89	2.2070	S. 13 52 33.0	14.619	0	0 19 22.29	2.1663	S. 0 55 4.5	17.195
1	22 37 18.24	2.2046	13 37 53.2	14.707	1	0 21 32.30	2.1673	0 37 52.3	17.210
2	22 39 30.45	2.2023	13 23 8.2	14.793	2	0 23 42.38	2.1685	0 20 39.3	17.223
3	22 41 42.52	2.2000	13 8 18.0	14.878	3	0 25 52.53	2.1698	S. 0 3 25.5	17.235
4	22 43 54.45	2.1976	12 53 22.8	14.962	4	0 28 2.76	2.1712	N. 0 13 48.9	17.245
5	22 46 6.24	2.1953	12 38 22.6	15.046	5	0 30 13.07	2.1726	0 31 3.9	17.254
6	22 48 17.88	2.1931	12 23 17.4	15.127	6	0 32 23.47	2.1740	0 48 19.3	17.260
7	22 50 29.40	2.1910	12 8 7.4	15.206	7	0 34 33.96	2.1756	1 5 35.0	17.264
8	22 52 40.80	2.1890	11 52 52.7	15.283	8	0 36 44.55	2.1774	1 22 50.9	17.266
9	22 54 52.08	2.1870	11 37 33.5	15.359	9	0 38 55.25	2.1792	1 40 7.0	17.267
10	22 57 3.24	2.1850	11 22 9.7	15.435	10	0 41 6.06	2.1810	1 57 23.0	17.267
11	22 59 14.28	2.1831	11 6 41.3	15.511	11	0 43 16.98	2.1828	2 14 39.0	17.265
12	23 1 25.21	2.1813	10 51 8.4	15.584	12	0 45 28.00	2.1848	2 31 54.8	17.261
13	23 3 36.04	2.1795	10 35 31.2	15.655	13	0 47 39.15	2.1869	2 49 10.3	17.254
14	23 5 46.77	2.1778	10 19 49.9	15.723	14	0 49 50.44	2.1892	3 6 25.3	17.245
15	23 7 57.39	2.1762	10 4 4.5	15.791	15	0 52 1.86	2.1915	3 23 39.7	17.235
16	23 10 7.92	2.1747	9 48 15.0	15.858	16	0 54 13.42	2.1938	3 40 53.5	17.223
17	23 12 18.36	2.1733	9 32 21.5	15.924	17	0 56 25.12	2.1962	3 58 6.5	17.210
18	23 14 28.72	2.1719	9 16 24.1	15.989	18	0 58 36.97	2.1987	4 15 18.7	17.195
19	23 16 39.00	2.1706	9 0 22.9	16.051	19	1 0 48.97	2.2013	4 32 29.9	17.178
20	23 18 49.20	2.1693	8 44 18.0	16.112	20	1 3 1.13	2.2041	4 49 40.0	17.159
21	23 20 59.32	2.1681	8 28 9.5	16.172	21	1 5 13.46	2.2069	5 6 48.9	17.138
22	23 23 9.37	2.1670	8 11 57.4	16.231	22	1 7 25.96	2.2097	5 23 56.5	17.115
23	23 25 19.37	2.1661	7 55 41.9	16.287	23	1 9 38.63	2.2125	5 41 2.6	17.090
24	23 27 29.31	2.1652	S. 7 39 23.0	16.343	24	1 11 51.46	2.2154	N. 5 58 7.2	17.063

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 11 51.46	2.2154	N. 5 58 7.2	17.063
1	1 14 4.48	2.2185	6 15 10.1	17.034
2	1 16 17.69	2.2217	6 32 11.2	17.004
3	1 18 31.09	2.2250	6 49 10.5	16.972
4	1 20 44.69	2.2283	7 6 7.8	16.937
5	1 22 58.49	2.2316	7 23 2.9	16.901
6	1 25 12.49	2.2350	7 39 55.8	16.863
7	1 27 26.70	2.2386	7 56 46.4	16.823
8	1 29 41.13	2.2422	8 13 34.5	16.780
9	1 31 55.77	2.2458	8 30 19.9	16.735
10	1 34 10.63	2.2496	8 47 2.6	16.689
11	1 36 25.73	2.2535	9 3 42.5	16.641
12	1 38 41.06	2.2574	9 20 19.5	16.591
13	1 40 56.62	2.2613	9 36 53.4	16.539
14	1 43 12.42	2.2653	9 53 24.1	16.485
15	1 45 28.46	2.2694	10 9 51.5	16.429
16	1 47 44.75	2.2735	10 26 15.5	16.371
17	1 50 1.29	2.2777	10 42 35.9	16.311
18	1 52 18.08	2.2820	10 58 52.7	16.249
19	1 54 35.13	2.2863	11 15 5.7	16.185
20	1 56 52.44	2.2907	11 31 14.8	16.118
21	1 59 10.02	2.2952	11 47 19.8	16.049
22	2 1 27.87	2.2997	12 3 20.7	15.979
23	2 3 45.99	2.3042	N.12 19 17.3	15.907

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 6 4.37	2.3087	N.12 35 9.5	15.833
1	2 8 23.03	2.3134	12 50 57.2	15.757
2	2 10 41.98	2.3182	13 6 40.3	15.679
3	2 13 1.22	2.3230	13 22 18.7	15.599
4	2 15 20.74	2.3278	13 37 52.2	15.517
5	2 17 40.55	2.3326	13 53 20.7	15.432
6	2 20 0.66	2.3375	14 8 44.0	15.345
7	2 22 21.06	2.3424	14 24 2.1	15.257
8	2 24 41.76	2.3473	14 39 14.9	15.168
9	2 27 2.75	2.3523	14 54 22.3	15.076
10	2 29 24.04	2.3574	15 9 24.1	14.982
11	2 31 45.64	2.3626	15 24 20.1	14.884
12	2 34 7.55	2.3677	15 39 10.2	14.786
13	2 36 29.76	2.3728	15 53 54.4	14.687
14	2 38 52.28	2.3779	16 8 32.6	14.585
15	2 41 15.11	2.3831	16 23 4.6	14.481
16	2 43 38.25	2.3883	16 37 30.3	14.375
17	2 46 1.70	2.3935	16 51 49.5	14.267
18	2 48 25.47	2.3987	17 6 2.2	14.157
19	2 50 49.55	2.4039	17 20 8.3	14.045
20	2 53 13.94	2.4092	17 34 7.6	13.930
21	2 55 38.65	2.4144	17 47 59.9	13.814
22	2 58 3.67	2.4196	18 1 45.2	13.696
23	3 0 29.01	2.4249	18 15 23.4	13.578
24	3 2 54.66	2.4302	N.18 28 54.5	13.457

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 2 54.66	2.4302	N.18 28 54.5	13.457
1	3 5 20.63	2.4355	18 42 18.2	13.333
2	3 7 46.91	2.4407	18 55 34.4	13.207
3	3 10 13.51	2.4460	19 8 43.0	13.079
4	3 12 40.43	2.4512	19 21 43.9	12.951
5	3 15 7.66	2.4564	19 34 37.0	12.821
6	3 17 35.19	2.4615	19 47 22.3	12.689
7	3 20 3.04	2.4667	19 59 59.6	12.554
8	3 22 31.20	2.4719	20 12 28.7	12.417
9	3 24 59.66	2.4770	20 24 49.6	12.279
10	3 27 28.43	2.4821	20 37 2.2	12.140
11	3 29 57.51	2.4872	20 49 6.3	11.998
12	3 32 26.89	2.4922	21 1 1.9	11.855
13	3 34 56.57	2.4972	21 12 48.9	11.710
14	3 37 26.54	2.5021	21 24 27.1	11.564
15	3 39 56.81	2.5069	21 35 56.5	11.416
16	3 42 27.37	2.5117	21 47 17.0	11.267
17	3 44 58.21	2.5165	21 58 28.5	11.115
18	3 47 29.34	2.5212	22 9 30.8	10.962
19	3 50 0.75	2.5258	22 20 23.9	10.808
20	3 52 32.44	2.5304	22 31 7.7	10.652
21	3 55 4.40	2.5350	22 41 42.1	10.494
22	3 57 36.63	2.5394	22 52 7.0	10.336
23	4 0 9.13	2.5438	N.23 2 22.4	10.176

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 2 41.89	2.5481	N.23 12 28.1	10.014
1	4 5 14.90	2.5523	23 22 24.0	9.851
2	4 7 48.16	2.5565	23 32 10.1	9.687
3	4 10 21.67	2.5605	23 41 46.4	9.521
4	4 12 55.42	2.5645	23 51 12.7	9.354
5	4 15 29.40	2.5683	24 0 28.9	9.185
6	4 18 3.61	2.5720	24 9 34.9	9.015
7	4 20 38.04	2.5757	24 18 30.7	8.845
8	4 23 12.69	2.5793	24 27 16.3	8.674
9	4 25 47.55	2.5827	24 35 51.6	8.501
10	4 28 22.61	2.5860	24 44 16.4	8.327
11	4 30 57.87	2.5893	24 52 30.8	8.152
12	4 33 33.33	2.5925	25 0 34.6	7.975
13	4 36 8.97	2.5955	25 8 27.8	7.798
14	4 38 44.78	2.5983	25 16 10.4	7.621
15	4 41 20.76	2.6010	25 23 42.3	7.442
16	4 43 56.90	2.6036	25 31 3.4	7.262
17	4 46 33.19	2.6061	25 38 13.7	7.082
18	4 49 9.63	2.6085	25 45 13.2	6.901
19	4 51 46.21	2.6107	25 52 1.8	6.718
20	4 54 22.92	2.6128	25 58 39.4	6.534
21	4 56 59.74	2.6147	26 5 5.9	6.350
22	4 59 36.68	2.6166	26 11 21.4	6.167
23	5 2 13.72	2.6183	26 17 25.9	5.983
24	5 4 50.86	2.6198	N.26 23 19.4	5.798

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 17.					TUESDAY 19.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 4 50.86	2.6198	N.26 23 19.4	5.798	0	7 9 21.88	2.5100	N.27 27 40.9	2.943
1	5 7 28.08	2.6210	26 29 1.7	5.612	1	7 11 52.31	2.5042	27 24 39.4	3.108
2	5 10 5.38	2.6222	26 34 32.8	5.425	2	7 14 22.39	2.4983	27 21 28.0	3.271
3	5 12 42.75	2.6233	26 39 52.7	5.238	3	7 16 52.11	2.4924	27 18 6.8	3.433
4	5 15 20.18	2.6242	26 45 1.4	5.052	4	7 19 21.47	2.4864	27 14 36.0	3.593
5	5 17 57.66	2.6250	26 49 58.9	4.865	5	7 21 50.48	2.4804	27 10 55.6	3.753
6	5 20 35.18	2.6256	26 54 45.2	4.677	6	7 24 19.12	2.4742	27 7 5.7	3.911
7	5 23 12.73	2.6260	26 59 20.2	4.489	7	7 26 47.38	2.4679	27 3 6.3	4.068
8	5 25 50.30	2.6263	27 3 43.9	4.301	8	7 29 15.26	2.4614	26 58 57.6	4.223
9	5 28 27.89	2.6265	27 7 56.3	4.113	9	7 31 42.75	2.4549	26 54 39.6	4.377
10	5 31 5.48	2.6265	27 11 57.4	3.925	10	7 34 9.85	2.4484	26 50 12.4	4.529
11	5 33 43.07	2.6263	27 15 47.2	3.737	11	7 36 36.56	2.4419	26 45 36.1	4.680
12	5 36 20.64	2.6259	27 19 25.8	3.548	12	7 39 2.87	2.4352	26 40 50.8	4.830
13	5 38 58.18	2.6254	27 22 53.0	3.359	13	7 41 28.78	2.4283	26 35 56.5	4.979
14	5 41 35.69	2.6247	27 26 8.9	3.170	14	7 43 54.28	2.4214	26 30 53.4	5.127
15	5 44 13.15	2.6238	27 29 13.4	2.981	15	7 46 19.35	2.4145	26 25 41.4	5.273
16	5 46 50.55	2.6229	27 32 6.6	2.793	16	7 48 44.01	2.4076	26 20 20.7	5.417
17	5 49 27.89	2.6218	27 34 48.6	2.606	17	7 51 8.26	2.4007	26 14 51.4	5.559
18	5 52 5.16	2.6205	27 37 19.4	2.419	18	7 53 32.09	2.3936	26 9 13.6	5.701
19	5 54 42.34	2.6189	27 39 38.9	2.231	19	7 55 55.49	2.3865	26 3 27.3	5.841
20	5 57 19.43	2.6172	27 41 47.1	2.043	20	7 58 18.46	2.3793	25 57 32.7	5.979
21	5 59 56.41	2.6154	27 43 44.0	1.855	21	8 0 41.00	2.3721	25 51 29.8	6.117
22	6 2 33.28	2.6135	27 45 29.7	1.668	22	8 3 3.11	2.3648	25 45 18.7	6.253
23	6 5 10.02	2.6113	N.27 47 4.2	1.482	23	8 5 24.78	2.3574	N.25 38 59.5	6.388
MONDAY 18.					WEDNESDAY 20.				
0	6 7 46.63	2.6090	N.27 48 27.6	1.296	0	8 7 46.00	2.3501	N.25 32 32.2	6.521
1	6 10 23.10	2.6065	27 49 39.8	1.110	1	8 10 6.78	2.3427	25 25 57.0	6.652
2	6 12 59.42	2.6039	27 50 40.9	0.925	2	8 12 27.12	2.3354	25 19 14.0	6.781
3	6 15 35.57	2.6011	27 51 30.9	0.741	3	8 14 47.03	2.3280	25 12 23.3	6.909
4	6 18 11.55	2.5983	27 52 9.9	0.558	4	8 17 6.49	2.3205	25 5 24.9	7.037
5	6 20 47.36	2.5953	27 52 37.9	0.375	5	8 19 25.50	2.3130	24 58 18.9	7.164
6	6 23 22.98	2.5920	27 52 54.9	0.192	6	8 21 44.05	2.3055	24 51 5.3	7.288
7	6 25 58.39	2.5885	27 53 1.0	+0.010	7	8 24 2.16	2.2981	24 43 44.3	7.410
8	6 28 33.60	2.5850	27 52 56.2	−0.171	8	8 26 19.82	2.2906	24 36 16.1	7.530
9	6 31 8.60	2.5814	27 52 40.5	0.352	9	8 28 37.03	2.2831	24 28 40.7	7.650
10	6 33 43.37	2.5776	27 52 14.0	0.531	10	8 30 53.79	2.2756	24 20 58.1	7.769
11	6 36 17.91	2.5736	27 51 36.8	0.709	11	8 33 10.10	2.2681	24 13 8.4	7.886
12	6 38 52.20	2.5694	27 50 49.0	0.886	12	8 35 25.96	2.2606	24 5 11.8	8.001
13	6 41 26.24	2.5652	27 49 50.5	1.064	13	8 37 41.37	2.2530	23 57 8.3	8.115
14	6 44 0.02	2.5609	27 48 41.4	1.240	14	8 39 56.32	2.2454	23 48 58.0	8.227
15	6 46 33.54	2.5564	27 47 21.7	1.416	15	8 42 10.82	2.2379	23 40 41.0	8.338
16	6 49 6.78	2.5517	27 45 51.5	1.590	16	8 44 24.87	2.2304	23 32 17.4	8.448
17	6 51 39.74	2.5468	27 44 11.0	1.762	17	8 46 38.47	2.2230	23 23 47.2	8.557
18	6 54 12.40	2.5419	27 42 20.1	1.934	18	8 48 51.63	2.2155	23 15 10.5	8.664
19	6 56 44.76	2.5369	27 40 18.9	2.105	19	8 51 4.34	2.2080	23 6 27.5	8.770
20	6 59 16.82	2.5319	27 38 7.5	2.275	20	8 53 16.60	2.2005	22 57 38.2	8.874
21	7 1 48.58	2.5266	27 35 45.9	2.444	21	8 55 28.40	2.1930	22 48 42.7	8.976
22	7 4 20.01	2.5211	27 33 14.2	2.612	22	8 57 39.76	2.1857	22 39 41.1	9.078
23	7 6 51.11	2.5156	27 30 32.5	2.778	23	8 59 50.69	2.1784	22 30 33.4	9.178
24	7 9 21.88	2.5100	N.27 27 40.9	2.943	24	9 2 1.18	2.1711	N.22 21 19.8	9.276

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 2 1.18	2.1711	N.22 21 19.8	9.276
1	9 4 11.23	2.1638	22 12 0.3	9.373
2	9 6 20.84	2.1564	22 2 35.0	9.469
3	9 8 30.00	2.1491	21 53 4.1	9.563
4	9 10 38.73	2.1419	21 43 27.5	9.656
5	9 12 47.03	2.1348	21 33 45.3	9.748
6	9 14 54.91	2.1277	21 23 57.7	9.838
7	9 17 2.36	2.1206	21 14 4.7	9.928
8	9 19 9.38	2.1134	21 4 6.4	10.016
9	9 21 15.97	2.1063	20 54 2.8	10.103
10	9 23 22.14	2.0993	20 43 54.1	10.188
11	9 25 27.90	2.0924	20 33 40.3	10.272
12	9 27 33.24	2.0856	20 23 21.5	10.354
13	9 29 38.17	2.0786	20 12 57.8	10.436
14	9 31 42.69	2.0720	20 2 29.2	10.516
15	9 33 46.81	2.0652	19 51 55.9	10.594
16	9 35 50.52	2.0585	19 41 17.9	10.672
17	9 37 53.83	2.0519	19 30 35.2	10.750
18	9 39 56.75	2.0453	19 19 47.9	10.826
19	9 41 59.27	2.0387	19 8 56.1	10.900
20	9 44 1.40	2.0323	18 57 59.9	10.972
21	9 46 3.15	2.0260	18 46 59.5	11.043
22	9 48 4.52	2.0196	18 35 54.8	11.114
23	9 50 5.51	2.0132	N.18 24 45.8	11.185

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 52 6.11	2.0069	N.18 13 32.6	11.254
1	9 54 6.34	2.0008	18 2 15.4	11.320
2	9 56 6.21	1.9948	17 50 54.2	11.386
3	9 58 5.72	1.9888	17 39 29.1	11.451
4	10 0 4.87	1.9827	17 28 0.1	11.515
5	10 2 3.66	1.9767	17 16 27.3	11.579
6	10 4 2.08	1.9708	17 4 50.7	11.640
7	10 6 0.15	1.9651	16 53 10.5	11.700
8	10 7 57.89	1.9595	16 41 26.7	11.760
9	10 9 55.30	1.9539	16 29 39.3	11.819
10	10 11 52.36	1.9483	16 17 48.4	11.876
11	10 13 49.09	1.9427	16 5 54.2	11.932
12	10 15 45.48	1.9371	15 53 56.6	11.988
13	10 17 41.54	1.9318	15 41 55.7	12.043
14	10 19 37.29	1.9266	15 29 51.5	12.097
15	10 21 32.74	1.9214	15 17 44.1	12.149
16	10 23 27.87	1.9162	15 5 33.6	12.200
17	10 25 22.69	1.9110	14 53 20.1	12.251
18	10 27 17.20	1.9060	14 41 3.5	12.301
19	10 29 11.41	1.9010	14 28 43.9	12.350
20	10 31 5.33	1.8962	14 16 21.5	12.398
21	10 32 58.96	1.8914	14 3 56.2	12.445
22	10 34 52.30	1.8867	13 51 28.1	12.491
23	10 36 45.36	1.8821	13 38 57.3	12.535
24	10 38 38.15	1.8775	N.13 26 23.9	12.580

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 38 38.15	1.8775	N.13 26 23.9	12.580
1	10 40 30.67	1.8730	13 13 47.8	12.624
2	10 42 22.92	1.8685	13 1 9.1	12.666
3	10 44 14.89	1.8641	12 48 27.9	12.708
4	10 46 6.61	1.8599	12 35 44.2	12.748
5	10 47 58.08	1.8557	12 22 58.2	12.787
6	10 49 49.30	1.8516	12 10 9.8	12.826
7	10 51 40.28	1.8476	11 57 19.1	12.865
8	10 53 31.02	1.8436	11 44 26.1	12.903
9	10 55 21.51	1.8396	11 31 30.8	12.940
10	10 57 11.77	1.8358	11 18 33.4	12.975
11	10 59 1.81	1.8321	11 5 33.9	13.010
12	11 0 51.63	1.8285	10 52 32.3	13.044
13	11 2 41.23	1.8249	10 39 28.7	13.077
14	11 4 30.62	1.8213	10 26 23.2	13.109
15	11 6 19.79	1.8178	10 13 15.7	13.141
16	11 8 8.76	1.8145	10 0 6.3	13.172
17	11 9 57.54	1.8113	9 46 55.1	13.201
18	11 11 46.12	1.8081	9 33 42.2	13.230
19	11 13 34.51	1.8049	9 20 27.5	13.259
20	11 15 22.71	1.8018	9 7 11.1	13.287
21	11 17 10.73	1.7989	8 53 53.1	13.314
22	11 18 58.58	1.7960	8 40 33.5	13.340
23	11 20 46.26	1.7931	N. 8 27 12.3	13.366

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 22 33.76	1.7903	N. 8 13 49.6	13.391
1	11 24 21.10	1.7877	8 0 25.4	13.415
2	11 26 8.29	1.7851	7 46 59.8	13.439
3	11 27 55.32	1.7825	7 33 32.8	13.461
4	11 29 42.20	1.7801	7 20 4.5	13.483
5	11 31 28.94	1.7779	7 6 34.9	13.505
6	11 33 15.55	1.7756	6 53 4.0	13.525
7	11 35 2.02	1.7733	6 39 31.9	13.545
8	11 36 48.36	1.7711	6 25 58.7	13.564
9	11 38 34.56	1.7691	6 12 24.3	13.583
10	11 40 20.65	1.7672	5 58 48.8	13.601
11	11 42 6.63	1.7653	5 45 12.3	13.618
12	11 43 52.49	1.7634	5 31 34.7	13.635
13	11 45 38.24	1.7617	5 17 56.2	13.650
14	11 47 23.89	1.7601	5 4 16.8	13.665
15	11 49 9.45	1.7585	4 50 36.4	13.680
16	11 50 54.91	1.7569	4 36 55.2	13.693
17	11 52 40.28	1.7554	4 23 13.2	13.705
18	11 54 25.56	1.7540	4 9 30.6	13.717
19	11 56 10.76	1.7528	3 55 47.2	13.729
20	11 57 55.89	1.7517	3 42 3.1	13.741
21	11 59 40.96	1.7506	3 28 18.3	13.752
22	12 1 25.96	1.7495	3 14 32.9	13.761
23	12 3 10.89	1.7484	3 0 47.0	13.769
24	12 4 55.76	1.7474	N. 2 47 0.6	13.778

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					**WEDNESDAY 27.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 4 55.76	1.7474	N. 2 47 0.6	13.778	0	13 29 10.26	1.7906	S. 8 11 22.2	13.390
1	12 6 40.58	1.7466	2 33 13.7	13.786	1	13 30 57.77	1.7933	8 24 44.8	13.365
2	12 8 25.36	1.7459	2 19 26.3	13.794	2	13 32 45.45	1.7961	8 38 5.9	13.340
3	12 10 10.09	1.7452	2 5 38.5	13.800	3	13 34 33.30	1.7989	8 51 25.5	13.313
4	12 11 54.78	1.7445	1 51 50.4	13.805	4	13 36 21.32	1.8017	9 4 43.4	13.284
5	12 13 39.44	1.7440	1 38 2.0	13.810	5	13 38 9.51	1.8046	9 17 59.5	13.255
6	12 15 24.07	1.7436	1 24 13.2	13.815	6	13 39 57.87	1.8076	9 31 13.9	13.225
7	12 17 8.67	1.7433	1 10 24.2	13.819	7	13 41 46.42	1.8107	9 44 26.5	13.195
8	12 18 53.25	1.7430	0 56 35.0	13.822	8	13 43 35.16	1.8139	9 57 37.3	13.164
9	12 20 37.82	1.7427	0 42 45.6	13.824	9	13 45 24.08	1.8171	10 10 46.2	13.132
10	12 22 22.38	1.7425	0 28 56.1	13.826	10	13 47 13.20	1.8203	10 23 53.1	13.099
11	12 24 6.93	1.7423	0 15 6.5	13.827	11	13 49 2.52	1.8236	10 36 58.0	13.065
12	12 25 51.46	1.7422	N. 0 1 16.9	13.827	12	13 50 52.04	1.8270	10 50 0.9	13.031
13	12 27 36.00	1.7423	S. 0 12 32.7	13.627	13	13 52 41.77	1.8305	11 3 1.7	12.995
14	12 29 20.55	1.7426	0 26 22.3	13.827	14	13 54 31.71	1.8341	11 16 0.3	12.960
15	12 31 5.12	1.7429	0 40 11.9	13.826	15	13 56 21.86	1.8377	11 28 56.8	12.923
16	12 32 49.70	1.7431	0 54 1.4	13.824	16	13 58 12.23	1.8413	11 41 51.0	12.884
17	12 34 34.30	1.7434	1 7 50.7	13.820	17	14 0 2.82	1.8450	11 54 42.9	12.645
18	12 36 18.91	1.7438	1 21 39.8	13.817	18	14 1 53.63	1.8488	12 7 32.4	12.805
19	12 38 3.55	1.7443	1 35 28.7	13.813	19	14 3 44.67	1.8527	12 20 19.5	12.764
20	12 39 48.23	1.7449	1 49 17.3	13.808	20	14 5 35.95	1.8567	12 33 4.1	12.723
21	12 41 32.95	1.7456	2 3 5.6	13.803	21	14 7 27.47	1.8607	12 45 46.3	12.682
22	12 43 17.71	1.7464	2 16 53.6	13.797	22	14 9 19.23	1.8647	12 58 25.9	12.639
23	12 45 2.52	1.7472	S. 2 30 41.2	13.789	23	14 11 11.23	1.8687	S. 13 11 2.8	12.594
TUESDAY 26.					**THURSDAY 28.**				
0	12 46 47.37	1.7480	S. 2 44 28.3	13.781	0	14 13 3.47	1.8728	S. 13 23 37.1	12.549
1	12 48 32.28	1.7490	2 58 14.9	13.773	1	14 14 55.96	1.8771	13 36 8.6	12.502
2	12 50 17.25	1.7500	3 12 1.0	13.765	2	14 16 48.72	1.8814	13 48 37.3	12.455
3	12 52 2.28	1.7511	3 25 46.7	13.756	3	14 18 41.74	1.8858	14 1 3.2	12.407
4	12 53 47.38	1.7523	3 39 31.8	13.746	4	14 20 35.02	1.8902	14 13 26.2	12.358
5	12 55 32.55	1.7536	3 53 16.2	13.734	5	14 22 28.57	1.8946	14 25 46.2	12.308
6	12 57 17.80	1.7549	4 6 59.8	13.721	6	14 24 22.38	1.8992	14 38 3.2	12.258
7	12 59 3.13	1.7562	4 20 42.7	13.709	7	14 26 16.47	1.9038	14 50 17.1	12.206
8	13 0 48.55	1.7577	4 34 24.9	13.697	8	14 28 10.84	1.9084	15 2 27.8	12.153
9	13 2 34.05	1.7592	4 48 6.4	13.684	9	14 30 5.48	1.9131	15 14 35.4	12.100
10	13 4 19.65	1.7608	5 1 47.0	13.670	10	14 32 0.41	1.9179	15 26 39.7	12.044
11	13 6 5.35	1.7624	5 15 26.7	13.655	11	14 33 55.63	1.9227	15 38 40.6	11.988
12	13 7 51.14	1.7641	5 29 5.5	13.638	12	14 35 51.13	1.9275	15 50 38.2	11.931
13	13 9 37.04	1.7660	5 42 43.3	13.621	13	14 37 46.92	1.9324	16 2 32.3	11.873
14	13 11 23.06	1.7679	5 56 20.0	13.604	14	14 39 43.01	1.9374	16 14 22.9	11.814
15	13 13 9.19	1.7698	6 9 55.7	13.586	15	14 41 39.41	1.9425	16 26 10.0	11.755
16	13 14 55.44	1.7718	6 23 30.3	13.568	16	14 43 36.11	1.9475	16 37 53.5	11.694
17	13 16 41.82	1.7739	6 37 3.8	13.548	17	14 45 33.11	1.9526	16 49 33.2	11.631
18	13 18 28.32	1.7761	6 50 36.1	13.527	18	14 47 30.42	1.9578	17 1 9.2	11.568
19	13 20 14.95	1.7784	7 4 7.1	13.506	19	14 49 28.04	1.9630	17 12 41.4	11.505
20	13 22 1.72	1.7807	7 17 36.8	13.485	20	14 51 25.98	1.9682	17 24 9.7	11.439
21	13 23 48.64	1.7831	7 31 5.3	13.463	21	14 53 24.23	1.9735	17 35 34.0	11.372
22	13 25 35.70	1.7855	7 44 32.4	13.440	22	14 55 22.80	1.9789	17 46 54.3	11.305
23	13 27 22.91	1.7880	7 57 58.1	13.415	23	14 57 21.69	1.9843	17 58 10.6	11.237
24	13 29 10.26	1.7906	S. 8 11 22.2	13.390	24	14 59 20.91	1.9897	S. 18 9 22.7	11.167

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 59 20.91	1.9897	S.18 9 22.7	11.167
1	15 1 20.46	1.9952	18 20 30.6	11.096
2	15 3 20.34	2.0006	18 31 34.2	11.024
3	15 5 20.54	2.0061	18 42 33.5	10.952
4	15 7 21.07	2.0117	18 53 28.4	10.878
5	15 9 21.95	2.0171	19 4 18.8	10.802
6	15 11 23.17	2.0231	19 15 4.6	10.725
7	15 13 24.73	2.0288	19 25 45.8	10.648
8	15 15 26.63	2.0346	19 36 22.4	10.570
9	15 17 28.88	2.0403	19 46 54.2	10.490
10	15 19 31.47	2.0461	19 57 21.2	10.409
11	15 21 34.41	2.0520	20 7 43.3	10.327
12	15 23 37.71	2.0579	20 18 0.4	10.244
13	15 25 41.36	2.0638	20 28 12.5	10.160
14	15 27 45.36	2.0696	20 38 19.5	10.075
15	15 29 49.71	2.0755	20 48 21.4	9.988
16	15 31 54.42	2.0815	20 58 18.0	9.899
17	15 33 59.49	2.0875	21 8 9.3	9.810
18	15 36 4.92	2.0935	21 17 55.2	9.719
19	15 38 10.71	2.0995	21 27 35.6	9.628
20	15 40 16.86	2.1055	21 37 10.5	9.536
21	15 42 23.37	2.1115	21 46 39.9	9.442
22	15 44 30.24	2.1175	21 56 3.6	9.347
23	15 46 37.48	2.1236	S.22 5 21.5	9.250

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 48 45.08	2.1297	S.22 14 33.6	9.153
1	15 50 53.04	2.1358	22 23 39.8	9.054
2	15 53 1.37	2.1419	22 32 40.1	8.954
3	15 55 10.07	2.1480	22 41 34.3	8.853
4	15 57 19.13	2.1541	22 50 22.4	8.751
5	15 59 28.56	2.1602	22 59 4.4	8.648
6	16 1 38.35	2.1662	23 7 40.1	8.543
7	16 3 48.51	2.1723	23 16 9.5	8.437
8	16 5 59.03	2.1783	23 24 32.5	8.329
9	16 8 9.91	2.1844	23 32 49.0	8.221
10	16 10 21.15	2.1904	23 40 59.0	8.112
11	16 12 32.76	2.1965	23 49 2.4	8.001
12	16 14 44.73	2.2025	23 56 59.0	7.888
13	16 16 57.06	2.2085	24 4 48.9	7.775
14	16 19 9.75	2.2145	24 12 32.0	7.661
15	16 21 22.80	2.2205	24 20 8.2	7.545
16	16 23 36.21	2.2264	24 27 37.4	7.429
17	16 25 49.97	2.2323	24 34 59.6	7.311
18	16 28 4.08	2.2382	24 42 14.7	7.192
19	16 30 18.55	2.2440	24 49 22.6	7.071
20	16 32 33.36	2.2498	24 56 23.2	6.949
21	16 34 48.52	2.2556	25 3 16.5	6.827
22	16 37 4.03	2.2613	25 10 2.4	6.703
23	16 39 19.88	2.2670	25 16 40.8	6.578
24	16 41 36.06	2.2727	S.25 23 11.7	6.452

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 41 36.06	2.2727	S.25 23 11.7	6.452
1	16 43 52.58	2.2783	25 29 35.0	6.324
2	16 46 9.44	2.2839	25 35 50.6	6.196
3	16 48 26.64	2.2894	25 41 58.5	6.067
4	16 50 44.17	2.2948	25 47 58.6	5.936
5	16 53 2.02	2.3001	25 53 50.8	5.803
6	16 55 20.18	2.3054	25 59 35.0	5.670
7	16 57 38.66	2.3107	26 5 11.2	5.537
8	16 59 57.47	2.3160	26 10 39.4	5.403
9	17 2 16.59	2.3211	26 15 59.6	5.268
10	17 4 36.01	2.3262	26 21 11.6	5.130
11	17 6 55.74	2.3312	26 26 15.2	4.991
12	17 9 15.76	2.3362	26 31 10.4	4.851
13	17 11 36.08	2.3411	26 35 57.3	4.711
14	17 13 56.69	2.3459	26 40 35.8	4.571
15	17 16 17.58	2.3506	26 45 5.8	4.429
16	17 18 38.76	2.3553	26 49 27.3	4.286
17	17 21 0.22	2.3598	26 53 40.2	4.141
18	17 23 21.94	2.3642	26 57 44.3	3.996
19	17 25 43.93	2.3686	27 1 39.7	3.851
20	17 28 6.18	2.3730	27 5 26.4	3.705
21	17 30 28.69	2.3772	27 9 4.3	3.558
22	17 32 51.45	2.3813	27 12 33.3	3.409
23	17 35 14.45	2.3853	S.27 15 53.4	3.259

MONDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 37 37.69	2.3892	S.27 19 4.4	3.109

PHASES OF THE MOON.

	d	h	m
○ Full Moon, . . .	1	4	9.6
☾ Last Quarter, . .	8	19	12.7
● New Moon, . .	15	10	17.1
☽ First Quarter, . .	22	15	18.7
○ Full Moon, . . .	30	18	46.3

	d	h
☾ Perigee, ...	13	18.0
☾ Apogee, ...	25	18.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Regulus	W.	70° 55′ 17″	3008	72° 25′ 20″	3002	73° 55′ 30″	2997	75° 25′ 47″	2990
	Jupiter	W.	46 44 22	2981	48 14 59	2975	49 45 43	2969	51 16 35	2963
	Antares	E.	29 17 16	3002	27 47 6	2997	26 16 50	2993	24 46 28	2989
	α Aquilæ	E.	82 18 39	3859	81 4 38	3860	79 50 38	3863	78 36 41	3867
	Saturn	E.	94 52 54	3021	93 23 7	3015	91 53 13	3009	90 23 12	3004
2	Regulus	W.	82 59 7	2960	84 30 10	2954	86 1 21	2946	87 32 41	2940
	Jupiter	W.	58 52 44	2934	60 24 20	2927	61 56 5	2920	63 27 58	2914
	Spica	W.	28 57 21	2975	30 28 5	2967	31 58 59	2958	33 30 4	2950
	α Aquilæ	E.	72 28 18	3904	71 15 2	3915	70 1 57	3927	68 49 5	3942
	Saturn	E.	82 51 17	2973	81 20 31	2967	79 49 37	2961	78 18 35	2954
	Fomalhaut	E.	99 46 4	3131	98 18 32	3124	96 50 51	3115	95 23 0	3108
3	Regulus	W.	95 11 26	2906	96 43 37	2898	98 15 58	2891	99 48 28	2884
	Jupiter	W.	71 9 28	2880	72 42 12	2873	74 15 6	2866	75 48 9	2858
	Spica	W.	41 8 7	2909	42 40 15	2901	44 12 33	2893	45 45 1	2884
	α Aquilæ	E.	62 48 57	4042	61 37 59	4070	60 27 28	4100	59 17 26	4133
	Saturn	E.	70 41 20	2920	69 9 27	2913	67 37 25	2906	66 5 14	2899
	Fomalhaut	E.	88 1 34	3073	86 32 51	3066	85 4 0	3060	83 35 1	3054
	α Pegasi	E.	108 13 32	3293	106 49 12	3279	105 24 36	3266	103 59 45	3253
4	Jupiter	W.	83 35 50	2820	85 9 52	2811	86 44 5	2804	88 18 28	2796
	Spica	W.	53 30 2	2842	55 3 35	2834	56 37 19	2825	58 11 14	2817
	α Aquilæ	E.	53 36 15	4354	52 30 12	4412	51 25 2	4476	50 20 49	4547
	Saturn	E.	58 22 1	2862	56 48 54	2855	55 15 37	2847	53 42 10	2840
	Fomalhaut	E.	76 8 15	3024	74 38 32	3019	73 8 43	3014	71 38 48	3009
	α Pegasi	E.	96 51 57	3197	95 25 44	3188	93 59 20	3178	92 32 44	3168
5	Jupiter	W.	96 13 7	2752	97 48 38	2744	99 24 20	2734	101 0 15	2725
	Spica	W.	66 3 42	2772	67 38 47	2762	69 14 5	2752	70 49 36	2743
	Antares	W.	20 9 53	2778	21 44 50	2767	23 20 1	2756	24 55 26	2745
	Saturn	E.	45 52 28	2801	44 18 1	2793	42 43 24	2785	41 8 37	2778
	Fomalhaut	E.	64 7 51	2990	62 37 26	2988	61 6 58	2985	59 36 27	2984
	α Pegasi	E.	85 17 3	3127	83 49 26	3120	82 21 41	3113	80 53 47	3107
	Sun	E.	136 23 26	3106	134 55 24	3096	133 27 9	3086	131 58 42	3075
6	Spica	W.	78 50 24	2692	80 27 14	2682	82 4 18	2671	83 41 37	2660
	Antares	W.	32 56 9	2692	34 33 0	2681	36 10 6	2669	37 47 27	2658
	Saturn	E.	33 12 17	2742	31 36 33	2737	30 0 42	2732	28 24 44	2728
	Fomalhaut	E.	52 3 43	2989	50 33 16	2993	49 2 54	2998	47 32 39	3005
	α Pegasi	E.	73 32 38	3083	72 4 8	3081	70 35 35	3078	69 6 58	3076
	Sun	E.	124 33 13	3021	123 3 26	3010	121 33 26	2999	120 3 12	2987
7	Spica	W.	91 51 52	2604	93 30 41	2593	95 9 46	2582	96 49 6	2569
	Antares	W.	45 58 0	2601	47 36 53	2590	49 16 2	2577	50 55 28	2565
	α Pegasi	E.	61 43 46	3082	60 15 15	3087	58 46 49	3093	57 18 31	3101
	Sun	E.	112 28 19	2927	110 56 34	2915	109 24 34	2902	107 52 18	2889
8	Antares	W.	59 16 50	2504	60 57 58	2491	62 39 24	2479	64 21 7	2466
	α Pegasi	E.	50 0 12	3173	48 33 31	3198	47 7 19	3225	45 41 39	3257
	Sun	E.	100 6 47	2824	98 32 50	2810	96 58 35	2796	95 24 2	2783
9	Antares	W.	72 54 15	2401	74 37 48	2388	76 21 40	2375	78 5 50	2362
	α Aquilæ	W.	39 58 19	5559	40 48 22	5314	41 41 19	5095	42 37 0	4899
	Sun	E.	87 26 49	2713	85 50 27	2700	84 13 47	2686	82 36 48	2672

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Regulus	W.	76° 56′ 12″	2985	78° 26′ 44″	2978	79° 57′ 24″	2972	81° 28′ 12″	2966
	Jupiter	W.	52 47 34	2958	54 18 40	2951	55 49 54	2946	57 21 15	2939
	Antares	E.	23 16 1	2984	21 45 28	2981	20 14 51	2977	18 44 9	2973
	α Aquilæ	E.	77 22 48	3872	76 9 0	3878	74 55 18	3886	73 41 44	3894
	Saturn	E.	88 53 4	2998	87 22 49	2992	85 52 26	2985	84 21 55	2980
2	Regulus	W.	89 4 9	2934	90 35 45	2927	92 7 30	2920	93 39 24	2913
	Jupiter	W.	64 59 59	2908	66 32 8	2901	68 4 26	2894	69 36 53	2887
	Spica	W.	35 1 20	2942	36 32 46	2933	38 4 23	2925	39 36 10	2917
	α Aquilæ	E.	67 36 28	3958	66 24 7	3975	65 12 3	3996	64 0 19	4018
	Saturn	E.	76 47 25	2948	75 16 7	2941	73 44 40	2934	72 13 4	2927
	Fomalhaut	E.	93 55 0	3101	92 26 51	3094	90 58 34	3087	89 30 8	3080
3	Regulus	W.	101 21 7	2876	102 53 56	2869	104 26 54	2862	106 0 2	2854
	Jupiter	W.	77 21 22	2851	78 54 44	2843	80 28 16	2835	82 1 58	2828
	Spica	W.	47 17 40	2876	48 50 29	2868	50 23 29	2859	51 56 40	2851
	α Aquilæ	E.	58 7 56	4169	56 59 1	4209	55 50 43	4252	54 43 6	4302
	Saturn	E.	64 32 54	2892	63 0 25	2684	61 27 46	2877	59 54 58	2870
	Fomalhaut	E.	82 5 55	3047	80 36 41	3042	79 7 20	3035	77 37 51	3030
	α Pegasi	E.	102 34 39	3242	101 9 19	3230	99 43 45	3219	98 17 58	3207
4	Jupiter	W.	89 53 1	2788	91 27 45	2779	93 2 41	2770	94 37 48	2761
	Spica	W.	59 45 20	2808	61 19 38	2798	62 54 8	2790	64 28 49	2781
	α Aquilæ	E.	49 17 38	4624	48 15 34	4711	47 14 44	4806	46 15 13	4915
	Saturn	E.	52 8 34	2832	50 34 48	2825	49 0 52	2816	47 26 45	2808
	Fomalhaut	E.	70 8 47	3005	68 38 40	3001	67 8 28	2997	65 38 12	2993
	α Pegasi	E.	91 5 56	3158	89 38 57	3151	88 11 49	3143	86 44 31	3134
5	Jupiter	W.	102 36 22	2715	104 12 42	2706	105 49 14	2696	107 25 59	2686
	Spica	W.	72 25 19	2733	74 1 15	2722	75 37 25	2713	77 13 48	2703
	Antares	W.	26 31 6	2735	28 7 0	2723	29 43 9	2713	31 19 32	2702
	Saturn	E.	39 33 40	2770	37 58 33	2763	36 23 17	2756	34 47 52	2749
	Fomalhaut	E.	58 5 54	2983	56 35 20	2983	55 4 46	2984	53 34 13	2986
	α Pegasi	E.	79 25 46	3101	77 57 38	3096	76 29 24	3091	75 1 4	3087
	Sun	E.	130 30 2	3065	129 1 10	3054	127 32 4	3043	126 2 45	3033
6	Spica	W.	85 19 10	2649	86 56 58	2638	88 35 1	2627	90 13 19	2616
	Antares	W.	39 25 3	2647	41 2 54	2636	42 41 0	2624	44 19 22	2612
	Saturn	E.	26 48 41	2725	25 12 34	2722	23 36 24	2722	22 0 14	2723
	Fomalhaut	E.	46 2 32	3014	44 32 36	3026	43 2 55	3039	41 33 31	3056
	α Pegasi	E.	67 38 19	3075	66 9 39	3076	64 41 0	3077	63 12 22	3078
	Sun	E.	118 32 43	2975	117 1 59	2964	115 31 1	2952	113 59 48	2939
7	Spica	W.	98 28 43	2558	100 8 36	2545	101 48 46	2533	103 29 13	2522
	Antares	W.	52 35 11	2553	54 15 10	2541	55 55 26	2529	57 35 59	2516
	α Pegasi	E.	55 50 22	3110	54 22 25	3122	52 54 42	3137	51 27 17	3153
	Sun	E.	106 19 45	2876	104 46 56	2863	103 13 50	2850	101 40 27	2837
8	Antares	W.	66 3 8	2453	67 45 27	2440	69 28 5	2427	71 11 1	2415
	α Pegasi	E.	44 16 37	3294	42 52 19	3338	41 28 51	3388	40 6 21	3448
	Sun	E.	93 49 12	2769	92 14 4	2755	90 38 37	2741	89 2 52	2728
9	Antares	W.	79 50 19	2349	81 35 7	2337	83 20 13	2324	85 5 38	2311
	α Aquilæ	W.	43 35 16	4720	44 35 59	4558	45 39 0	4411	46 44 11	4277
	Sun	E.	80 59 30	2658	79 21 54	2644	77 43 59	2631	76 5 46	2617

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Antares	W.	86° 51′ 22″	2298	88° 37′ 24″	2286	90° 23′ 44″	2274	92° 10′ 22″	2261
	α Aquilæ	W.	47 51 25	4154	49 0 35	4041	50 11 34	3938	51 24 15	3844
	Saturn	W.	21 23 22	2400	23 6 57	2375	24 51 8	2352	26 35 52	2331
	Sun	E.	74 27 14	2604	72 48 24	2590	71 9 15	2577	69 29 48	2564
11	α Aquilæ	W.	57 49 52	3470	59 10 50	3412	60 32 53	3358	61 55 58	3308
	Saturn	W.	35 26 26	2247	37 13 44	2233	39 1 23	2219	40 49 22	2206
	Sun	E.	61 8 12	2502	59 27 2	2490	57 45 35	2480	56 3 53	2468
12	α Aquilæ	W.	69 4 33	3110	70 32 30	3080	72 1 4	3052	73 30 12	3028
	Saturn	W.	49 53 44	2152	51 43 24	2143	53 33 17	2135	55 23 23	2126
	Fomalhaut	W.	36 8 4	2665	37 45 31	2612	39 24 9	2567	41 3 49	2527
	Sun	E.	47 31 42	2421	45 48 37	2412	44 5 19	2404	42 21 50	2397
13	α Aquilæ	W.	81 2 35	2939	82 34 5	2927	84 5 49	2919	85 37 44	2912
	Saturn	W.	64 36 39	2096	66 27 44	2092	68 18 56	2088	70 10 13	2085
	Fomalhaut	W.	49 34 6	2387	51 18 0	2367	53 2 22	2350	54 47 9	2335
	Sun	E.	33 42 10	2370	31 57 52	2367	30 13 30	2364	28 29 4	2363
17	Sun	W.	21 33 32	2582	23 12 52	2596	24 51 52	2612	26 30 31	2627
	Regulus	E.	70 26 26	2280	68 39 57	2295	66 53 50	2311	65 8 6	2327
	Jupiter	E.	94 5 2	2268	92 18 15	2282	90 31 49	2298	88 45 46	2313
18	Sun	W.	34 38 15	2713	36 14 38	2731	37 50 37	2749	39 26 12	2768
	Regulus	E.	56 25 30	2414	54 42 15	2431	52 59 25	2449	51 17 0	2467
	Jupiter	E.	80 1 27	2398	78 17 49	2415	76 34 35	2432	74 51 46	2450
19	Sun	W.	47 17 58	2862	48 51 6	2881	50 23 49	2900	51 56 8	2920
	Venus	W.	25 51 17	2974	27 22 2	2992	28 52 25	3009	30 22 27	3026
	Regulus	E.	42 51 32	2564	41 11 47	2583	39 32 29	2604	37 53 39	2624
	Jupiter	E.	66 23 59	2540	64 43 41	2558	63 3 48	2576	61 24 20	2593
	Spica	E.	96 50 38	2543	95 10 24	2560	93 30 34	2578	91 51 9	2596
20	Sun	W.	59 31 44	3013	61 1 41	3030	62 31 16	3048	64 0 29	3067
	Venus	W.	37 47 4	3117	39 14 53	3135	40 42 20	3153	42 9 26	3171
	Regulus	E.	29 46 26	2730	28 10 26	2753	26 34 57	2777	24 59 59	2802
	Jupiter	E.	53 13 4	2682	51 36 0	2700	49 59 20	2717	48 23 3	2734
	Spica	E.	83 40 1	2682	82 2 57	2700	80 26 17	2716	78 49 59	2732
21	Sun	W.	71 21 10	3152	72 48 17	3168	74 15 5	3183	75 41 34	3198
	Venus	W.	49 19 43	3255	50 44 47	3271	52 9 32	3287	53 33 59	3301
	Pollux	W.	19 57 17	2816	21 31 24	2830	23 5 13	2844	24 38 44	2857
	Jupiter	E.	40 27 4	2815	38 52 55	2830	37 19 6	2845	35 45 36	2860
	Spica	E.	70 53 49	2811	69 19 36	2827	67 45 43	2842	66 12 9	2855
22	Sun	W.	82 49 41	3268	84 14 30	3282	85 39 3	3294	87 3 22	3306
	Venus	W.	60 31 58	3372	61 54 46	3386	63 17 19	3398	64 39 38	3410
	Pollux	W.	32 22 17	2917	33 54 14	2929	35 25 56	2940	36 57 24	2950
	Jupiter	E.	28 2 51	2931	26 31 12	2945	24 59 50	2958	23 28 45	2973
	Spica	E.	58 28 44	2922	56 56 53	2934	55 25 17	2946	53 53 56	2957
	Antares	E.	104 20 36	2913	102 48 34	2926	101 16 48	2937	99 45 16	2948
23	Sun	W.	94 1 41	3358	95 24 46	3367	96 47 40	3375	98 10 25	3384
	Venus	W.	71 27 58	3463	72 49 3	3472	74 9 58	3480	75 30 44	3489
	Pollux	W.	44 31 36	2997	46 1 52	3005	47 31 58	3013	49 1 55	3021

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Antares	W.	93° 57′ 19″	2249	95° 44′ 33″	2237	97° 32′ 5″	2226	99° 19′ 54″	2214
	α Aquilæ	W.	52 38 32	3757	53 54 19	3676	55 11 32	3602	56 30 4	3533
	Saturn	W.	28 21 6	2312	30 6 48	2294	31 52 57	2277	33 39 30	2262
	Sun	E.	67 50 4	2551	66 10 2	2538	64 29 42	2526	62 49 5	2515
11	α Aquilæ	W.	63 20 0	3262	64 44 56	3219	66 10 43	3180	67 37 16	3143
	Saturn	W.	42 37 40	2194	44 26 16	2183	46 15 9	2172	48 4 19	2162
	Sun	E.	54 21 55	2458	52 39 43	2448	50 57 16	2438	49 14 36	2429
12	α Aquilæ	W.	74 59 50	3005	76 29 56	2985	78 0 28	2967	79 31 22	2952
	Saturn	W.	57 13 42	2119	59 4 12	2113	60 54 52	2107	62 45 41	2101
	Fomalhaut	W.	42 44 24	2492	44 25 48	2461	46 7 56	2433	47 50 43	2408
	Sun	E.	40 38 11	2391	38 54 23	2384	37 10 26	2379	35 26 21	2375
13	α Aquilæ	W.	87 9 48	2907	88 41 58	2905	90 14 11	2904	91 46 25	2906
	Saturn	W.	72 1 35	2083	73 53 0	2081	75 44 28	2081	77 35 57	2080
	Fomalhaut	W.	56 32 18	2321	58 17 47	2310	60 3 32	2300	61 49 31	2291
	Sun	E.	26 44 36	2363	25 0 8	2363	23 15 40	2364	21 31 13	2366
17	Sun	W.	28 8 49	2643	29 46 45	2660	31 24 18	2678	33 1 28	2695
	Regulus	E.	63 22 46	2344	61 37 50	2360	59 53 18	2378	58 9 11	2396
	Jupiter	E.	87 0 6	2330	85 14 50	2346	83 29 58	2363	81 45 30	2380
18	Sun	W.	41 1 22	2786	42 36 8	2805	44 10 29	2824	45 44 26	2843
	Regulus	E.	49 35 1	2487	47 53 29	2505	46 12 23	2525	44 31 44	2544
	Jupiter	E.	73 9 22	2467	71 27 23	2486	69 45 50	2504	68 4 42	2522
19	Sun	W.	53 28 2	2938	54 59 33	2957	56 30 40	2975	58 1 24	2994
	Venus	W.	31 52 7	3044	33 21 25	3063	34 50 20	3081	36 18 53	3099
	Regulus	E.	36 15 16	2644	34 37 21	2665	32 59 54	2687	31 22 56	2707
	Jupiter	E.	59 45 16	2612	58 6 37	2629	56 28 22	2647	54 50 31	2665
	Spica	E.	90 12 8	2613	88 33 31	2631	86 55 18	2648	85 17 28	2665
20	Sun	W.	65 29 19	3084	66 57 48	3101	68 25 56	3119	69 53 43	3135
	Venus	W.	43 36 10	3188	45 2 34	3205	46 28 37	3222	47 54 20	3239
	Regulus	E.	23 25 34	2829	21 51 44	2859	20 18 32	2891	18 46 1	2925
	Jupiter	E.	46 47 8	2750	45 11 35	2767	43 36 24	2783	42 1 34	2798
	Spica	E.	77 14 2	2749	75 38 27	2766	74 3 14	2782	72 28 22	2796
21	Sun	W.	77 7 46	3213	78 33 40	3227	79 59 17	3242	81 24 37	3255
	Venus	W.	54 58 9	3317	56 22 1	3332	57 45 36	3345	59 8 55	3359
	Pollux	W.	26 11 58	2869	27 44 56	2881	29 17 39	2894	30 50 6	2906
	Jupiter	E.	34 12 26	2875	32 39 35	2889	31 7 2	2904	29 34 48	2917
	Spica	E.	64 38 53	2869	63 5 55	2883	61 33 15	2896	60 0 51	2909
22	Sun	W.	88 27 27	3317	89 51 19	3328	91 14 58	3338	92 38 25	3348
	Venus	W.	66 1 43	3422	67 23 35	3433	68 45 14	3443	70 6 42	3454
	Pollux	W.	38 28 39	2961	39 59 41	2970	41 30 31	2980	43 1 9	2989
	Jupiter	E.	21 57 58	2986	20 27 28	3000	18 57 15	3014	17 27 20	3029
	Spica	E.	52 22 49	2968	50 51 56	2979	49 21 17	2989	47 50 50	2998
	Antares	E.	98 13 58	2958	96 42 53	2969	95 12 1	2978	93 41 21	2988
23	Sun	W.	99 33 0	3391	100 55 27	3399	102 17 45	3404	103 39 57	3411
	Venus	W.	76 51 20	3497	78 11 48	3504	79 32 8	3510	80 52 21	3516
	Pollux	W.	50 31 42	3027	52 1 21	3033	53 30 53	3039	55 0 17	3045

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Spica	E.	46° 20′ 35″	3007	44° 50′ 31″	3017	43° 20′ 39″	3026	41° 50′ 58″	3034
	Antares	E.	92 10 53	2997	90 40 36	3005	89 10 29	3012	87 40 31	3019
24	Sun	W.	105 2 1	3416	106 23 59	3422	107 45 51	3426	109 7 38	3430
	Venus	W.	82 12 27	3522	83 32 27	3527	84 52 21	3532	86 12 10	3535
	Pollux	W.	56 29 34	3050	57 58 45	3054	59 27 51	3058	60 56 52	3062
	Regulus	W.	20 21 9	3147	21 48 22	3139	23 15 44	3134	24 43 12	3130
	Spica	E.	34 24 57	3070	32 56 11	3077	31 27 33	3082	29 59 2	3089
	Antares	E.	80 12 47	3049	78 43 35	3054	77 14 29	3058	75 45 28	3062
25	Sun	W.	115 55 34	3444	117 17 1	3445	118 38 27	3446	119 59 52	3446
	Venus	W.	92 50 20	3548	94 9 51	3550	95 29 20	3551	96 48 48	3551
	Pollux	W.	68 21 0	3073	69 49 42	3074	71 18 23	3075	72 47 3	3075
	Regulus	W.	32 1 40	3114	33 29 32	3113	34 57 26	3110	36 25 23	3109
	Antares	E.	68 21 21	3073	66 52 39	3075	65 23 59	3075	63 55 19	3076
26	Pollux	W.	80 10 31	3070	81 39 17	3068	83 8 6	3065	84 36 58	3063
	Regulus	W.	43 45 52	3094	45 14 9	3091	46 42 30	3087	48 10 55	3083
	Jupiter	W.	19 55 2	3103	21 23 8	3098	22 51 20	3093	24 19 38	3087
	Antares	E.	56 31 57	3071	55 3 12	3069	53 34 25	3067	52 5 35	3065
27	Pollux	W.	92 2 17	3043	93 31 36	3039	95 1 1	3034	96 30 32	3029
	Regulus	W.	55 34 19	3060	57 3 18	3055	58 32 23	3049	60 1 35	3043
	Jupiter	W.	31 42 42	3062	33 11 38	3057	34 40 40	3052	36 9 49	3046
	Antares	E.	44 40 27	3046	43 11 11	3042	41 41 50	3037	40 12 23	3031
	α Aquilæ	E.	95 0 17	3888	93 46 45	3881	92 33 6	3874	91 19 20	3867
	Saturn .	E.	110 40 11	3055	109 11 6	3050	107 41 55	3044	106 12 37	3039
28	Regulus	W.	67 29 28	3011	68 59 27	3004	70 29 35	2997	71 59 51	2989
	Jupiter	W.	43 37 27	3013	45 7 24	3006	46 37 29	3000	48 7 42	2993
	Antares	E.	32 43 28	3004	31 13 20	2997	29 43 4	2991	28 12 40	2985
	α Aquilæ	E.	85 9 5	3846	83 54 50	3844	82 40 33	3843	81 26 15	3843
	Saturn	E.	98 44 20	3007	97 14 16	3001	95 44 4	2993	94 13 43	2986
29	Regulus	W.	79 33 37	2950	81 4 52	2942	82 36 17	2934	84 7 53	2926
	Jupiter	W.	55 41 10	2954	57 12 21	2946	58 43 42	2937	60 15 14	2929
	Spica	W.	25 32 46	2973	27 3 33	2962	28 34 34	2950	30 5 49	2940
	α Aquilæ	E.	75 15 1	3856	74 0 56	3862	72 46 58	3869	71 33 7	3879
	Saturn	E.	86 39 38	2948	85 8 20	2939	83 36 51	2931	82 5 12	2923
	Fomalhaut	E.	103 3 42	3129	101 36 7	3118	100 8 19	3108	98 40 19	3098
30	Regulus	W.	91 48 33	2883	93 21 14	2873	94 54 7	2865	96 27 11	2856
	Jupiter	W.	67 55 33	2886	69 28 10	2877	71 0 58	2868	72 33 58	2859
	Spica	W.	37 45 24	2868	39 17 58	2878	40 50 45	2868	42 23 45	2859
	α Aquilæ	E.	65 26 41	3947	64 14 9	3967	63 1 57	3990	61 50 8	4016
	Saturn	E.	74 24 17	2880	72 51 33	2872	71 18 38	2863	69 45 32	2855
	Fomalhaut	E.	91 17 24	3052	89 48 15	3043	88 18 56	3034	86 49 26	3026
	α Pegasi	E.	111 18 34	3285	109 54 5	3268	108 29 16	3251	107 4 7	3236
31	Jupiter	W.	80 21 48	2815	81 55 57	2806	83 30 17	2798	85 4 48	2788
	Spica	W.	50 11 52	2810	51 46 7	2801	53 20 34	2791	54 55 14	2782
	α Aquilæ	E.	55 58 10	4189	54 49 34	4236	53 41 42	4288	52 34 38	4344
	Saturn	E.	61 57 15	2811	60 23 2	2803	58 48 38	2795	57 14 3	2785
	Fomalhaut	E.	79 19 27	2989	77 49 0	2981	76 18 24	2975	74 47 40	2969
	α Pegasi	E.	99 54 1	3167	98 27 12	3155	97 0 9	3143	95 32 51	3132

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Spica	E.	40° 21′ 27″	3042	38° 52′ 6″	3049	37° 22′ 54″	3056	35° 53′ 51″	3064
	Antares	E.	86 10 42	3026	84 41 2	3033	83 11 30	3039	81 42 5	3044
24	Sun	W.	110 29 21	3434	111 50 59	3437	113 12 34	3440	114 34 5	3442
	Venus	W.	87 31 55	3539	88 51 36	3543	90 11 13	3545	91 30 47	3546
	Pollux	W.	62 25 48	3065	63 54 41	3068	65 23 30	3070	66 52 16	3072
	Regulus	W.	26 10 45	3126	27 38 23	3123	29 6 5	3119	30 33 51	3117
	Spica	E.	28 30 39	3096	27 2 24	3101	25 34 16	3108	24 6 16	3114
	Antares	E.	74 16 32	3065	72 47 40	3068	71 18 51	3070	69 50 5	3072
25	Sun	W.	121 21 16	3446	122 42 40	3446	124 4 5	3446	125 25 30	3444
	Venus	W.	98 8 16	3551	99 27 44	3550	100 47 13	3549	102 6 43	3548
	Pollux	W.	74 15 43	3074	75 44 24	3074	77 13 5	3073	78 41 47	3072
	Regulus	W.	37 53 22	3106	39 21 24	3103	40 49 30	3101	42 17 39	3097
	Antares	E.	62 26 40	3076	60 58 1	3075	59 29 21	3074	58 0 40	3073
26	Pollux	W.	86 5 53	3060	87 34 52	3056	89 3 55	3052	90 33 3	3047
	Regulus	W.	49 39 25	3079	51 8 0	3074	52 36 41	3070	54 5 27	3065
	Jupiter	W.	25 48 3	3083	27 16 33	3078	28 45 9	3073	30 13 52	3067
	Antares	E.	50 36 42	3061	49 7 45	3058	47 38 44	3054	46 9 38	3050
27	Pollux	W.	98 0 9	3023	99 29 53	3017	100 59 45	3011	102 29 44	3005
	Regulus	W.	61 30 54	3037	63 0 21	3031	64 29 55	3025	65 59 37	3018
	Jupiter	W.	37 39 5	3039	39 8 29	3034	40 38 0	3027	42 7 39	3020
	Antares	E.	38 42 49	3026	37 13 9	3021	35 43 22	3016	34 13 29	3009
	α Aquilæ	E.	90 5 27	3861	88 51 28	3857	87 37 25	3853	86 23 17	3849
	Saturn	E.	104 43 13	3033	103 13 41	3027	101 44 2	3021	100 14 15	3014
28	Regulus	W.	73 30 17	2982	75 0 52	2974	76 31 37	2966	78 2 32	2958
	Jupiter	W	49 38 4	2985	51 8 36	2977	52 39 18	2969	54 10 9	2962
	Antares	E.	26 42 9	2979	25 11 30	2973	23 40 43	2966	22 9 48	2960
	α Aquilæ	E.	80 11 57	3844	78 57 40	3845	77 43 24	3848	76 29 11	3851
	Saturn	E.	92 43 13	2979	91 12 34	2971	89 41 45	2963	88 10 46	2956
29	Regulus	W.	85 39 39	2917	87 11 36	2909	88 43 44	2900	90 16 3	2891
	Jupiter	W.	61 46 56	2920	63 18 49	2912	64 50 53	2903	66 23 8	2895
	Spica	W.	31 37 17	2929	33 8 59	2919	34 40 54	2908	36 13 3	2898
	α Aquilæ	E.	70 19 26	3889	69 5 55	3901	67 52 36	3915	66 39 31	3929
	Saturn	E.	80 33 22	2915	79 1 22	2906	77 29 11	2898	75 56 49	2890
	Fomalhaut	E.	97 12 7	3088	95 43 43	3079	94 15 8	3070	92 46 22	3060
30	Regulus	W.	98 0 26	2847	99 33 53	2838	101 7 31	2830	102 41 20	2821
	Jupiter	W.	74 7 9	2851	75 40 31	2842	77 14 5	2832	78 47 51	2824
	Spica	W.	43 56 57	2848	45 30 22	2839	47 3 59	2829	48 37 49	2819
	α Aquilæ	E.	60 38 44	4043	59 27 47	4074	58 17 20	4109	57 7 27	4146
	Saturn	E.	68 12 15	2846	66 38 47	2838	65 5 8	2828	63 31 17	2820
	Fomalhaut	E.	85 19 46	3018	83 49 56	3009	82 19 55	3002	80 49 45	2996
	α Pegasi	E.	105 38 40	3220	104 12 55	3206	102 46 53	3193	101 20 35	3179
31	Jupiter	W.	86 39 32	2779	88 14 28	2770	89 49 35	2761	91 24 54	2752
	Spica	W.	56 30 6	2772	58 5 10	2763	59 40 27	2753	61 15 56	2744
	α Aquilæ	E.	51 28 26	4408	50 23 12	4479	49 19 1	4557	48 15 59	4643
	Saturn	E.	55 39 16	2777	54 4 18	2769	52 29 9	2761	50 53 50	2753
	Fomalhaut	E.	73 16 48	2963	71 45 49	2958	70 14 44	2953	68 43 32	2949
	α Pegasi	E.	94 5 20	3121	92 37 36	3112	91 9 41	3102	89 41 34	3093

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Merid-ian.	Equation of Time, *to be subtracted from* / *added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	4 36 41.49	10.227	N.22 4 34.3	+20.32	15 48.32	68.42	2 30.01	0.370
Tues.	2	4 40 47.15	10.245	22 12 30.6	19.36	15 48.18	68.47	2 20.92	0.388
Wed.	3	4 44 53.21	10.261	22 20 3.7	18.39	15 48.05	68.52	2 11.45	0.404
Thur.	4	4 48 59.64	10.276	22 27 13.4	17.41	15 47.92	68.57	2 1.61	0.419
Frid.	5	4 53 6.44	10.291	22 33 59.7	16.43	15 47.80	68.62	1 51.40	0.434
Sat.	6	4 57 13.60	10.305	22 40 22.5	15.44	15 47.68	68.66	1 40.82	0.448
Sun.	7	5 1 21.09	10.318	22 46 21.4	14.45	15 47.56	68.70	1 29.92	0.461
Mon.	8	5 5 28.89	10.330	22 51 56.4	13.45	15 47.44	68.74	1 18.71	0.473
Tues.	9	5 9 36.99	10.343	22 57 7.3	12.44	15 47.33	68.78	1 7.21	0.486
Wed.	10	5 13 45.34	10.354	23 1 54.0	11.43	15 47.23	68.82	0 55.44	0.497
Thur.	11	5 17 53.94	10.363	23 6 16.4	10.44	15 47.13	68.85	0 43.42	0.506
Frid.	12	5 22 2.77	10.373	23 10 14.5	9.42	15 47.03	68.88	0 31.19	0.516
Sat.	13	5 26 11.80	10.380	23 13 48.2	8.39	15 46.94	68.90	0 18.76	0.523
Sun.	14	5 30 21.00	10.386	23 16 57.2	7.36	15 46.86	68.92	0 6.15	0.529
Mon.	15	5 34 30.33	10.391	23 19 41.6	6.33	15 46.78	68.94	0 6.59	0.534
Tues.	16	5 38 39.78	10.396	23 22 1.3	5.30	15 46.71	68.96	0 19.45	0.539
Wed.	17	5 42 49.32	10.398	23 23 56.1	4.27	15 46.64	68.97	0 32.40	0.541
Thur.	18	5 46 58.91	10.399	23 25 26.1	3.24	15 46.58	68.98	0 45.40	0.542
Frid.	19	5 51 8.54	10.400	23 26 31.3	2.20	15 46.53	68.98	0 58.43	0.543
Sat.	20	5 55 18.18	10.400	23 27 11.7	1.17	15 46.48	68.98	1 11.47	0.543
Sun.	21	5 59 27.80	10.399	23 27 27.2	+ 0.13	15 46.43	68.98	1 24.49	0.543
Mon.	22	6 3 37.38	10.397	23 27 17.9	– 0.91	15 46.39	68.98	1 37.49	0.540
Tues.	23	6 7 46.90	10.394	23 26 43.7	1.94	15 46.35	68.97	1 50.41	0.537
Wed.	24	6 11 56.32	10.389	23 25 44.7	2.97	15 46.32	68.96	2 3.23	0.532
Thur.	25	6 16 5.63	10.384	23 24 21.1	4.00	15 46.29	68.94	2 15.95	0.527
Frid.	26	6 20 14.81	10.378	23 22 32.8	5.04	15 46.26	68.92	2 28.54	0.521
Sat.	27	6 24 23.84	10.372	23 20 20.0	6.06	15 46.24	68.90	2 40.97	0.515
Sun.	28	6 28 32.68	10.364	23 17 42.5	7.08	15 46.22	68.88	2 53.22	0.507
Mon.	29	6 32 41.33	10.356	23 14 40.5	8.09	15 46.20	68.85	3 5.28	0.499
Tues.	30	6 36 49.79	10.347	23 11 14.2	9.10	15 46.19	68.82	3 17.15	0.490
Wed.	31	6 40 58.03	10.337	N.23 7 23.5	–10.11	15 46.18	68.79	3 28.79	0.480

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

+ prefixed to the hourly change of declination, indicates that north declinations are increasing, and south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to* / *subtracted from* *Mean Time*.	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	4 36 41.92	10.226	N.22 4 35.2	+20.32	2 29.99	0.370	4 39 11.91
Tues.	2	4 40 47.56	10.244	22 12 31.4	19.36	2 20.90	0.388	4 43 8.46
Wed.	3	4 44 53.59	10.260	22 20 4.4	18.39	2 11.43	0.404	4 47 5.02
Thur.	4	4 48 59.99	10.275	22 27 14.0	17.41	2 1.59	0.419	4 51 1.58
Frid.	5	4 53 6.76	10.290	22 34 0.2	16.43	1 51.38	0.434	4 54 58.14
Sat.	6	4 57 13.89	10.304	22 40 22.9	15.44	1 40.81	0.448	4 58 54.70
Sun.	7	5 1 21.35	10.317	22 46 21.7	14.45	1 29.91	0.461	5 2 51.26
Mon.	8	5 5 29.12	10.329	22 51 56.6	13.45	1 18.70	0.473	5 6 47.82
Tues.	9	5 9 37.18	10.342	22 57 7.5	12.44	1 7.20	0.486	5 10 44.38
Wed.	10	5 13 45.50	10.353	23 1 54.2	11.43	0 55.44	0.497	5 14 40.94
Thur.	11	5 17 54.07	10.362	23 6 16.6	10.44	0 43.42	0.506	5 18 37.49
Frid.	12	5 22 2.86	10.372	23 10 14.6	9.42	0 31.19	0.516	5 22 34.05
Sat.	13	5 26 11.85	10.379	23 13 48.2	8.39	0 18.76	0.523	5 26 30.61
Sun.	14	5 30 21.02	10.385	23 16 57.2	7.36	0 6.15	0.529	5 30 27.17
Mon.	15	5 34 30.32	10.390	23 19 41.6	6.33	0 6.59	0.534	5 34 23.73
Tues.	16	5 38 39.73	10.395	23 22 1.3	5.30	0 19.45	0.539	5 38 20.28
Wed.	17	5 42 49.23	10.397	23 23 56.1	4.27	0 32.39	0.541	5 42 16.84
Thur.	18	5 46 58.79	10.398	23 25 26.1	3.24	0 45.39	0.542	5 46 13.40
Frid.	19	5 51 8.38	10.399	23 26 31.3	2.20	0 58.42	0.543	5 50 9.96
Sat.	20	5 55 17.98	10.399	23 27 11.7	1.17	1 11.46	0.543	5 54 6.52
Sun.	21	5 59 27.56	10.398	23 27 27.2	+ 0.13	1 24.48	0.543	5 58 3.08
Mon.	22	6 3 37.11	10.396	23 27 17.9	− 0.91	1 37.47	0.540	6 1 59.64
Tues.	23	6 7 46.59	10.393	23 26 43.8	1.94	1 50.39	0.537	6 5 56.20
Wed.	24	6 11 55.97	10.388	23 25 44.9	2.97	2 3.21	0.532	6 9 52.76
Thur.	25	6 16 5.24	10.383	23 24 21.3	4.00	2 15.93	0.527	6 13 49.31
Frid.	26	6 20 14.39	10.377	23 22 33.0	5.04	2 28.52	0.521	6 17 45.87
Sat.	27	6 24 23.38	10.371	23 20 20.2	6.06	2 40.95	0.515	6 21 42.43
Sun.	28	6 28 32.19	10.363	23 17 42.8	7.08	2 53.20	0.507	6 25 38.99
Mon.	29	6 32 40.81	10.355	23 14 40.9	8.09	3 5.26	0.499	6 29 35.55
Tues.	30	6 36 49.23	10.346	23 11 14.6	9.10	3 17.12	0.490	6 33 32.11
Wed.	31	6 40 57.43	10.336	N.23 7 24.0	−10.11	3 28.76	0.480	6 37 28.67

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination, indicates that north declinations are decreasing, south declinations increasing.

Diff. for 1 hour.
$+9^{s}.8565$

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	152	70 46 11.6	46 1.0	143.60	−0.57	0.0062196	+26.0	19 17 37.91
2	153	71 43 37.4	43 26.6	143.56	0.63	.0062814	25.5	19 13 42.00
3	154	72 41 2.4	40 51.4	143.53	0.67	.0063420	25.0	19 9 46.09
4	155	73 38 26.7	38 15.5	143.50	0.67	.0064013	24.4	19 5 50.18
5	156	74 35 50.4	35 39.0	143.48	0.63	.0064590	23.7	19 1 54.27
6	157	75 33 13.5	33 1.9	143.45	0.57	.0065150	23.0	18 57 58.36
7	158	76 30 35.9	30 23.1	143.43	0.49	.0065693	22.2	18 54 2.45
8	159	77 27 57.8	27 44.8	143.40	0.39	.0066217	21.4	18 50 6.53
9	160	78 25 19.2	25 7.0	143.38	0.27	.0066720	20.5	18 46 10.62
10	161	79 22 40.1	22 27.7	143.36	−0.14	.0067202	19.6	18 42 14.71
11	162	80 20 0.6	19 48.0	143.34	0.00	.0067660	18.6	18 38 18.80
12	163	81 17 20.6	17 7.8	143.32	+0.13	.0068095	17.6	18 34 22.88
13	164	82 14 40.1	14 27.1	143.30	0.25	.0068505	16.6	18 30 26.97
14	165	83 11 59.1	11 46.0	143.27	0.35	.0068889	15.5	18 26 31.06
15	166	84 9 17.4	9 4.1	143.25	0.42	.0069248	14.4	18 22 35.14
16	167	85 6 35.0	6 21.5	143.22	0.47	.0069579	13.3	18 18 39.23
17	168	86 3 52.1	3 38.4	143.20	0.49	.0069886	12.3	18 14 43.31
18	169	87 1 8.6	0 54.7	143.17	0.48	.0070169	11.3	18 10 47.40
19	170	87 58 24.4	58 10.3	143.14	0.44	.0070427	10.3	18 6 51.49
20	171	88 55 39.5	55 25.2	143.11	0.36	.0070662	9.3	18 2 55.57
21	172	89 52 53.9	52 38.4	143.09	0.26	.0070875	8.4	17 58 59.66
22	173	90 50 7.7	49 53.0	143.06	0.16	.0071066	7.6	17 55 3.75
23	174	91 47 20.9	47 6.0	143.04	+0.04	.0071238	6.8	17 51 7.84
24	175	92 44 33.5	44 18.5	143.02	−0.10	.0071391	6.0	17 47 11.93
25	176	93 41 45.6	41 30.4	143 00	0.24	.0071528	5.3	17 43 16.02
26	177	94 38 57.2	38 41.8	142.98	0.37	.0071648	4.7	17 39 20.11
27	178	95 36 8.4	35 52.8	142.96	0.47	.0071753	4.1	17 35 24.20
28	179	96 33 19.4	33 3.6	142.95	0.54	.0071843	3.5	17 31 28.28
29	180	97 30 30.2	30 14.2	142.94	0.59	.0071919	2.9	17 27 32.37
30	181	98 27 40.9	27 24.7	142.94	0.63	.0071980	2.3	17 23 36.46
31	182	99 24 51.7	24 35.3	142.95	−0.64	0.0072026	+ 1.6	17 19 40.55

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
$-9^{s}.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 19.3	15 23.3	56 7.3	+1.22	56 22.1	+1.24	13 28.7	2.36	16.6
2	15 27.4	15 31.5	56 37.0	1.25	56 52.1	1.25	14 25.8	2.38	17.6
3	15 35.6	15 39.7	57 7.1	1.25	57 22.1	1.24	15 22.4	2.33	18.6
4	15 43.7	15 47.7	57 36.9	1.23	57 51.7	1.22	16 17.2	2.23	19.6
5	15 51.7	15 55.6	58 6.3	1.20	58 20.6	1.18	17 9.4	2.12	20.6
6	15 59.4	16 3.0	58 34.5	1.14	58 47.9	1.09	17 59.2	2.04	21.6
7	16 6.5	16 9.8	59 0.7	1.04	59 12.7	0.96	18 47.6	2.00	22.6
8	16 12.8	16 15.4	59 23.7	0.86	59 33.4	0.74	19 35.8	2.02	23.6
9	16 17.6	16 19.3	59 41.5	0.60	59 47.7	0.43	20 25.1	2.10	24.6
10	16 20.4	16 20.9	59 51.7	+0.24	59 53.3	+0.03	21 16.9	2.22	25.6
11	16 20.6	16 19.6	59 52.4	−0.20	59 48.6	−0.43	22 12.2	2.38	26.6
12	16 17.8	16 15.2	59 41.9	0.67	59 32.4	0.91	23 10.9	2.51	27.6
13	16 11.8	16 7.8	59 20.1	1.14	59 5.2	1.34	☌		28.6
14	16 3.1	15 57.8	58 48.0	1.52	58 28.8	1.67	0 12.1	2.57	0.2
15	15 52.2	15 46.2	58 7.9	1.79	57 45.9	1.87	1 13.2	2.51	1.2
16	15 40.0	15 33.7	57 23.1	1.91	57 0.2	1.91	2 11.8	2.36	2.2
17	15 27.5	15 21.5	56 37.5	1.88	56 15.3	1.81	3 6.2	2.16	3 2
18	15 15.8	15 10.5	55 54.2	1.70	55 34.6	1.56	3 55.7	1.97	4.2
19	15 5.6	15 1.2	55 16.7	1.41	55 0.8	1.24	4 40.9	1.81	5.2
20	14 57.4	14 54.3	54 47.0	1.05	54 35.5	0.85	5 22.9	1.70	6.2
21	14 51.9	14 50.2	54 26.6	0.64	54 20.1	0.43	6 2.8	1.64	7.2
22	14 49.1	14 48.7	54 16.2	−0.22	54 14.9	−0.00	6 41.9	1.63	8.2
23	14 49.1	14 50.1	54 16.1	+0.20	54 19.7	+0.40	7 21.3	1.67	9.2
24	14 51.7	14 53.9	54 25.7	0.59	54 33.9	0.77	8 2.3	1.76	10.2
25	14 56.7	15 0.0	54 44.2	0.93	54 56.3	1.08	8 46.0	1.89	11.2
26	15 3.7	15 7.8	55 10.0	1.20	55 25.1	1.30	9 33.2	2.05	12.2
27	15 12.2	15 16.8	55 41.2	1.38	55 58.1	1.44	10 24.5	2.22	13.2
28	15 21.6	15 26.4	56 15.6	1.47	56 33.3	1.48	11 19.6	2.36	14.2
29	15 31.2	15 35.9	56 50.9	1.46	57 8.2	1.42	12 17.1	2.42	15.2
30	15 40.5	15 44.8	57 24.9	1.36	57 40.9	1.29	13 15.2	2.40	16.2
31	15 48.9	15 52.7	57 55.8	+1.20	58 9.7	+1.11	14 11.8	2.31	17.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 37 37.69	2.3892	S.27 19 4.4	3.109
1	17 40 1.16	2.3931	27 22 6.4	2.959
2	17 42 24.86	2.3968	27 24 59.4	2.808
3	17 44 48.79	2.4005	27 27 43.3	2.655
4	17 47 12.93	2.4040	27 30 18.0	2.502
5	17 49 37.28	2.4074	27 32 43.5	2.348
6	17 52 1.82	2.4107	27 34 59.7	2.193
7	17 54 26.56	2.4140	27 37 6.6	2.038
8	17 56 51.50	2.4171	27 39 4.2	1.883
9	17 59 16.62	2.4200	27 40 52.5	1.727
10	18 1 41.91	2.4229	27 42 31.4	1.569
11	18 4 7.37	2.4258	27 44 0.8	1.411
12	18 6 33.00	2.4285	27 45 20.7	1.253
13	18 8 58.78	2.4310	27 46 31.1	1.094
14	18 11 24.71	2.4333	27 47 32.0	0.935
15	18 13 50.78	2.4356	27 48 23.3	0.775
16	18 16 16.98	2.4378	27 49 5.0	0.615
17	18 18 43.31	2.4399	27 49 37.1	0.455
18	18 21 9.77	2.4419	27 49 59.6	0.294
19	18 23 36.34	2.4437	27 50 12.4	−0.132
20	18 26 3.01	2.4453	27 50 15.5	+0.030
21	18 28 29.77	2.4468	27 50 8.8	0.192
22	18 30 56.62	2.4482	27 49 52.4	0.354
23	18 33 23.56	2.4496	S.27 49 26.3	0.516

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 35 50.58	2.4508	S.27 48 50.5	0.679
1	18 38 17.66	2.4518	27 48 4.9	0.842
2	18 40 44.80	2.4528	27 47 9.5	1.005
3	18 43 12.00	2.4537	27 46 4.2	1.169
4	18 45 39.24	2.4544	27 44 49.2	1.333
5	18 48 6.52	2.4550	27 43 24.3	1.496
6	18 50 33.84	2.4555	27 41 49.6	1.660
7	18 53 1.18	2.4558	27 40 5.1	1.824
8	18 55 28.53	2.4559	27 38 10.8	1.988
9	18 57 55.89	2.4560	27 36 6.6	2.152
10	19 0 23.25	2.4560	27 33 52.6	2.315
11	19 2 50.61	2.4559	27 31 28.8	2.478
12	19 5 17.96	2.4557	27 28 55.3	2.641
13	19 7 45.29	2.4553	27 26 11.9	2.805
14	19 10 12.59	2.4547	27 23 18.7	2.969
15	19 12 39.85	2.4540	27 20 15.7	3.132
16	19 15 7.07	2 4533	27 17 2.9	3.295
17	19 17 34.24	2.4524	27 13 40.3	3.457
18	19 20 1.36	2.4515	27 10 8.0	3.620
19	19 22 28.42	2.4504	27 6 25.9	3.782
20	19 24 55.40	2.4491	27 2 34.1	3.944
21	19 27 22.31	2.4478	26 58 32.6	4.106
22	19 29 49.14	2.4464	26 54 21.4	4.267
23	19 32 15.88	2.4449	26 50 0.6	4.428
24	19 34 42.53	2.4433	S.26 45 30.1	4.588

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 34 42.53	2.4433	S.26 45 30.1	4.588
1	19 37 9.08	2.4415	26 40 50.0	4.748
2	19 39 35.51	2.4396	26 36 0.3	4.908
3	19 42 1.83	2.4377	26 31 1.1	5.067
4	19 44 28.03	2.4357	26 25 52.3	5.226
5	19 46 54.11	2.4336	26 20 34.0	5.384
6	19 49 20.06	2.4313	26 15 6.2	5.542
7	19 51 45.87	2.4290	26 9 29.0	5.699
8	19 54 11.54	2.4266	26 3 42.4	5.855
9	19 56 37.06	2.4241	25 57 46.4	6.011
10	19 59 2.43	2.4215	25 51 41.1	6.166
11	20 1 27.64	2.4187	25 45 26.5	6.320
12	20 3 52.68	2.4159	25 39 2.7	6.475
13	20 6 17.55	2.4131	25 32 29.7	6.628
14	20 8 42.25	2.4103	25 25 47.5	6.780
15	20 11 6.78	2.4073	25 18 56.1	6.932
16	20 13 31.13	2.4042	25 11 55.7	7.082
17	20 15 55.28	2.4010	25 4 46.2	7.232
18	20 18 19.24	2.3978	24 57 27.8	7.381
19	20 20 43.01	2.3945	24 50 0.5	7.530
20	20 23 6.58	2.3911	24 42 24.2	7.678
21	20 25 29.94	2.3877	24 34 39.1	7.825
22	20 27 53.10	2.3843	24 26 45.3	7.970
23	20 30 16.05	2.3808	S.24 18 42.7	8.115

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 32 38.79	2.3772	S.24 10 31.5	8.259
1	20 35 1.31	2.3735	24 2 11.7	8.402
2	20 37 23.61	2.3698	23 53 43.3	8.545
3	20 39 45.69	2.3661	23 45 6.3	8.687
4	20 42 7.54	2.3623	23 36 20.9	8.827
5	20 44 29.16	2.3585	23 27 27.1	8.966
6	20 46 50.56	2.3547	23 18 25.0	9.104
7	20 49 11.73	2.3508	23 9 14.6	9.242
8	20 51 32.66	2.3468	22 59 56.0	9.378
9	20 53 53.34	2.3428	22 50 29.3	9.513
10	20 56 13.79	2.3388	22 40 54.5	9.647
11	20 58 34.00	2.3349	22 31 11.6	9.781
12	21 0 53.98	2.3309	22 21 20.8	9.913
13	21 3 13.71	2.3268	22 11 22.1	10.043
14	21 5 33.19	2.3227	22 1 15.6	10.173
15	21 7 52.43	2.3187	21 51 1.3	10.302
16	21 10 11.43	2.3146	21 40 39.3	10.430
17	21 12 30.18	2.3104	21 30 9.7	10.556
18	21 14 48.67	2.3062	21 19 32.6	10.681
19	21 17 6.92	2.3021	21 8 48.0	10.806
20	21 19 24.93	2.2979	20 57 56.0	10.930
21	21 21 42.68	2.2938	20 46 56.5	11.053
22	21 24 0.18	2.2897	20 35 49.7	11.173
23	21 26 17.44	2.2856	20 24 35.8	11.291
24	21 28 34.45	2.2814	S.20 13 14.8	11.409

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 28 34.45	2.2814	S.20 13 14.8	11.409
1	21 30 51.21	2.2772	20 1 46.7	11.527
2	21 33 7.72	2.2730	19 50 11.6	11.644
3	21 35 23.98	2.2689	19 38 29.5	11.759
4	21 37 39.99	2.2649	19 26 40.6	11.872
5	21 39 55.76	2.2609	19 14 44.9	11.983
6	21 42 11.29	2.2568	19 2 42.6	12.094
7	21 44 26.58	2.2527	18 50 33.6	12.205
8	21 46 41.62	2.2486	18 38 18.1	12.314
9	21 48 56.41	2.2445	18 25 56.0	12.422
10	21 51 10.96	2.2406	18 13 27.5	12.528
11	21 53 25.28	2.2367	18 0 52.7	12.633
12	21 55 39.37	2.2328	17 48 11.6	12.737
13	21 57 53.22	2.2289	17 35 24.3	12.839
14	22 0 6.84	2.2250	17 22 31.0	12.940
15	22 2 20.22	2.2211	17 9 31.6	13.039
16	22 4 33.37	2.2173	16 56 26.3	13.138
17	22 6 46.30	2.2136	16 43 15.1	13.235
18	22 8 59.00	2.2099	16 29 58.1	13.331
19	22 11 11.48	2.2062	16 16 35.4	13.426
20	22 13 23.75	2.2025	16 3 7.0	13.520
21	22 15 35.79	2.1988	15 49 33.0	13.613
22	22 17 47.61	2.1953	15 35 53.5	13.703
23	22 19 59.23	2.1919	S.15 22 8.6	13.792

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 22 10.64	2.1884	S.15 8 18.5	13.880
1	22 24 21.84	2.1850	14 54 23.1	13.967
2	22 26 32.84	2.1816	14 40 22.5	14.054
3	22 28 43.64	2.1783	14 26 16.7	14.139
4	22 30 54.24	2.1751	14 12 5.9	14.222
5	22 33 4.65	2.1719	13 57 50.2	14.303
6	22 35 14.87	2.1687	13 43 29.6	14.383
7	22 37 24.90	2.1657	13 29 4.2	14.462
8	22 39 34.75	2.1627	13 14 34.1	14.540
9	22 41 44.42	2.1597	12 59 59.4	14.616
10	22 43 53.91	2.1568	12 45 20.2	14.691
11	22 46 3.23	2.1540	12 30 36.5	14.766
12	22 48 12.39	2.1512	12 15 48.3	14.839
13	22 50 21.38	2.1485	12 0 55.8	14.910
14	22 52 30.21	2.1458	11 45 59.2	14.979
15	22 54 38.88	2.1432	11 30 58.4	15.048
16	22 56 47.40	2,1407	11 15 53.5	15.115
17	22 58 55.77	2.1383	11 0 44.6	15.181
18	23 1 4.00	2.1360	10 45 31.8	15.245
19	23 3 12.09	2.1337	10 30 15.2	15.309
20	23 5 20.04	2.1314	10 14 54.8	15.371
21	23 7 27.86	2.1292	9 59 30.7	15.432
22	23 9 35.55	2.1272	9 44 3.0	15.491
23	23 11 43.12	2.1252	9 28 31.8	15.548
24	23 13 50.58	2.1233	S. 9 12 57.3	15.604

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 13 50.58	2.1233	S. 9 12 57.3	15.604
1	23 15 57.92	2.1214	8 57 19.4	15.660
2	23 18 5.15	2.1197	8 41 38.2	15.714
3	23 20 12.28	2.1180	8 25 53.8	15.766
4	23 22 19.31	2.1164	8 10 6.3	15.817
5	23 24 26.25	2.1148	7 54 15.8	15.866
6	23 26 33.09	2.1133	7 38 22.4	15.914
7	23 28 39.85	2.1120	7 22 26.2	15.961
8	23 30 46.53	2.1107	7 6 27.1	16.007
9	23 32 53.13	2.1094	6 50 25.3	16.051
10	23 34 59.66	2.1083	6 34 20.9	16.093
11	23 37 6.13	2.1072	6 18 14.0	16.134
12	23 39 12.53	2.1062	6 2 4.8	16.174
13	23 41 18.88	2.1054	5 45 53.2	16.213
14	23 43 25.18	2.1046	5 29 39.2	16.252
15	23 45 31.43	2.1038	5 13 23.0	16.288
16	23 47 37.64	2.1032	4 57 4.7	16.322
17	23 49 43.82	2.1027	4 40 44.4	16.354
18	23 51 49.97	2.1022	4 24 22.3	16.384
19	23 53 56.09	2.1018	4 7 58.3	16.415
20	23 56 2.19	2.1016	3 51 32.5	16.445
21	23 58 8.28	2.1014	3 35 4.9	16.473
22	0 0 14.36	2.1013	3 18 35.7	16.498
23	0 2 20.44	2.1012	S. 3 2 5.1	16.521

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 4 26.51	2.1013	S. 2 45 33.2	16.544
1	0 6 32.59	2.1015	2 28 59.9	16.566
2	0 8 38.68	2.1017	2 12 25.3	16.587
3	0 10 44.79	2.1020	1 55 49.4	16.606
4	0 12 50.92	2.1024	1 39 12.5	16.623
5	0 14 57.08	2.1029	1 22 34.6	16.638
6	0 17 3.27	2.1035	1 5 55.9	16.653
7	0 19 9.50	2.1042	0 49 16.3	16.666
8	0 21 15.77	2.1049	0 32 36.0	16.678
9	0 23 22.09	2.1057	S. 0 15 55.0	16.688
10	0 25 28.46	2.1067	N. 0 0 46.6	16.696
11	0 27 34.90	2.1078	0 17 28.6	16.701
12	0 29 41.40	2.1089	0 34 10.8	16.706
13	0 31 47.97	2.1102	0 50 53.3	16.711
14	0 33 54.62	2.1115	1 7 36.1	16.715
15	0 36 1.35	2.1128	1 24 19.1	16.716
16	0 38 8.16	2.1143	1 41 2.1	16.715
17	0 40 15.07	2.1159	1 57 44.9	16.712
18	0 42 22.07	2.1175	2 14 27.5	16.708
19	0 44 29.17	2.1193	2 31 9.8	16.703
20	0 46 36.38	2.1212	2 47 51.8	16.697
21	0 48 43.71	2.1232	3 4 33.4	16.688
22	0 50 51.16	2.1252	3 21 14.4	16.678
23	0 52 58.73	2.1272	3 37 54.8	16.667
24	0 55 6.42	2.1294	N. 3 54 34.4	16.654

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 55 6.42	2.1294	N. 3 54 34.4	16.654
1	0 57 14.25	2.1317	4 11 13.2	16.639
2	0 59 22.22	2.1341	4 27 51.1	16.622
3	1 1 30.34	2.1366	4 44 27.9	16.604
4	1 3 38.61	2.1391	5 1 3.6	16.585
5	1 5 47.03	2.1417	5 17 38.1	16.565
6	1 7 55.61	2.1444	5 34 11.4	16.543
7	1 10 4.36	2.1472	5 50 43.2	16.518
8	1 12 13.28	2.1502	6 7 13.5	16.492
9	1 14 22.38	2.1532	6 23 42.2	16.464
10	1 16 31.66	2.1562	6 40 9.2	16.435
11	1 18 41.12	2.1593	6 56 34.4	16.404
12	1 20 50.77	2.1625	7 12 57.7	16.372
13	1 23 0.62	2.1658	7 29 19.0	16.338
14	1 25 10.67	2.1692	7 45 38.2	16.302
15	1 27 20.93	2.1727	8 1 55.2	16.264
16	1 29 31.40	2.1762	8 18 9.9	16.225
17	1 31 42.08	2.1798	8 34 22.2	16.183
18	1 33 52.98	2.1836	8 50 31.9	16.140
19	1 36 4.11	2.1874	9 6 39.0	16.096
20	1 38 15.47	2.1912	9 22 43.4	16.051
21	1 40 27.06	2.1952	9 38 45.1	16.004
22	1 42 38.89	2.1992	9 54 43.9	15.954
23	1 44 50.96	2.2032	N.10 10 39.6	15.902

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 47 3.28	2.2074	N.10 26 32.1	15.849
1	1 49 15.85	2.2117	10 42 21.4	15.795
2	1 51 28.68	2.2160	10 58 7.4	15.739
3	1 53 41.77	2.2204	11 13 50.0	15.680
4	1 55 55.13	2.2249	11 29 29.0	15.619
5	1 58 8.76	2.2293	11 45 4.3	15.558
6	2 0 22.65	2.2338	12 0 35.9	15.495
7	2 2 36.82	2.2385	12 16 3.6	15.429
8	2 4 51.28	2.2433	12 31 27.3	15.362
9	2 7 6.02	2.2481	12 46 47.0	15.293
10	2 9 21.05	2.2529	13 2 2.5	15.223
11	2 11 36.37	2.2578	13 17 13.7	15.150
12	2 13 51.99	2.2628	13 32 20.5	15.076
13	2 16 7.91	2.2678	13 47 22.8	15.000
14	2 18 24.13	2.2728	14 2 20.5	14.922
15	2 20 40.64	2.2778	14 17 13.4	14.842
16	2 22 57.46	2.2830	14 32 1.5	14.761
17	2 25 14.61	2.2883	14 46 44.6	14.677
18	2 27 32.07	2.2936	15 1 22.7	14.591
19	2 29 49.85	2.2989	15 15 55.6	14.504
20	2 32 7.94	2.3042	15 30 23.2	14.416
21	2 34 26.35	2.3096	15 44 45.5	14.326
22	2 36 45.09	2.3151	15 59 2.3	14.233
23	2 39 4.16	2.3206	16 13 13.5	14.138
24	2 41 23.56	2.3261	N.16 27 18.9	14.042

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 41 23.56	2.3261	N.16 27 18.9	14.042
1	2 43 43.29	2.3316	16 41 18.5	13.944
2	2 46 3.35	2.3372	16 55 12.2	13.845
3	2 48 23.75	2.3428	17 8 59.9	13.744
4	2 50 44.49	2.3484	17 22 41.5	13.641
5	2 53 5.56	2.3540	17 36 16.8	13.535
6	2 55 26.97	2.3597	17 49 45.6	13.427
7	2 57 48.72	2.3654	18 3 8.0	13.319
8	3 0 10.81	2.3711	18 16 23.8	13.209
9	3 2 33.25	2.3768	18 29 33.0	13.097
10	3 4 56.03	2.3825	18 42 35.4	12.982
11	3 7 19.15	2.3882	18 55 30.8	12.864
12	3 9 42.62	2.3939	19 8 19.1	12.746
13	3 12 6.43	2.3997	19 21 0.3	12.627
14	3 14 30.59	2.4055	19 33 34.4	12.506
15	3 16 55.09	2.4112	19 46 1.1	12.383
16	3 19 19.93	2.4169	19 58 20.4	12.258
17	3 21 45.12	2.4226	20 10 32.1	12.131
18	3 24 10.65	2.4283	20 22 36.1	12.003
19	3 26 36.52	2.4340	20 34 32.4	11.873
20	3 29 2.73	2.4397	20 46 20.8	11.741
21	3 31 29.29	2.4453	20 58 1.3	11.607
22	3 33 56.18	2.4509	21 9 33.7	11.472
23	3 36 23.40	2.4565	N.21 20 58.0	11.335

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 38 50.96	2.4621	N.21 32 14.0	11.197
1	3 41 18.85	2.4676	21 43 21.6	11.057
2	3 43 47.07	2.4731	21 54 20.8	10.915
3	3 46 15.62	2.4786	22 5 11.4	10.771
4	3 48 44.50	2.4840	22 15 53.3	10.626
5	3 51 13.70	2.4893	22 26 26.5	10.479
6	3 53 43.21	2.4945	22 36 50.8	10.331
7	3 56 13.04	2.4998	22 47 6.2	10.182
8	3 58 43.18	2.5050	22 57 12.6	10.030
9	4 1 13.64	2.5101	23 7 9.8	9.877
10	4 3 44.40	2.5151	23 16 57.8	9.723
11	4 6 15.45	2.5200	23 26 36.6	9.568
12	4 8 46.80	2.5249	23 36 6.0	9.411
13	4 11 18.44	2.5297	23 45 25.9	9.252
14	4 13 50.37	2.5345	23 54 36.2	9.091
15	4 16 22.58	2.5392	24 3 36.8	8.930
16	4 18 55.07	2.5437	24 12 27.7	8.768
17	4 21 27.83	2.5482	24 21 8.9	8.605
18	4 24 0.86	2.5527	24 29 40.3	8.440
19	4 26 34.15	2.5570	24 38 1.8	8.273
20	4 29 7.69	2.5611	24 46 13.2	8.105
21	4 31 41.48	2.5652	24 54 14.4	7.936
22	4 34 15.51	2.5691	25 2 5.5	7.766
23	4 36 49.77	2.5729	25 9 46.4	7.595
24	4 39 24.26	2.5767	N.25 17 16.9	7.423

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 13.					**MONDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 39 24.26	2.5767	N.25 17 16.9	7.423	0	6 44 38.44	2.5794	N.27 43 34.4	1.371
1	4 41 58.97	2.5803	25 24 37.1	7.250	1	6 47 13.09	2.5755	27 42 6.8	1.549
2	4 44 33.90	2.5838	25 31 46.9	7.076	2	6 49 47.50	2.5715	27 40 28.5	1.727
3	4 47 9.03	2.5872	25 38 46.2	6.900	3	6 52 21.67	2.5673	27 38 39.6	1.904
4	4 49 44.36	2.5904	25 45 34.9	6.724	4	6 54 55.58	2.5630	27 36 40.1	2.079
5	4 52 19.88	2.5936	25 52 13.1	6.547	5	6 57 29.23	2.5585	27 34 30.2	2.252
6	4 54 55.59	2.5966	25 58 40.6	6.369	6	7 0 2.60	2.5538	27 32 9.9	2.425
7	4 57 31.47	2.5994	26 4 57.4	6.190	7	7 2 35.69	2.5491	27 29 39.2	2.598
8	5 0 7.52	2.6022	26 11 3.5	6.010	8	7 5 8.49	2.5442	27 26 58.2	2.769
9	5 2 43.73	2.6048	26 16 58.7	5.830	9	7 7 40.99	2.5391	27 24 7.0	2.938
10	5 5 20.09	2.6072	26 22 43.1	5.649	10	7 10 13.18	2.5339	27 21 5.6	3.108
11	5 7 56.59	2.6094	26 28 16.6	5.467	11	7 12 45.06	2.5287	27 17 54.1	3.275
12	5 10 33.22	2.6115	26 33 39.1	5.285	12	7 15 16.63	2.5234	27 14 32.6	3.442
13	5 13 9.97	2.6135	26 38 50.7	5.102	13	7 17 47.87	2.5178	27 11 1.1	3.607
14	5 15 46.84	2.6154	26 43 51.3	4.919	14	7 20 18.77	2.5121	27 7 19.7	3.771
15	5 18 23.82	2.6171	26 48 40.9	4.735	15	7 22 49.32	2.5063	27 3 28.6	3.934
16	5 21 0.89	2.6186	26 53 19.4	4.551	16	7 25 19.53	2.5006	26 59 27.7	4.096
17	5 23 38.05	2.6199	26 57 46.8	4.365	17	7 27 49.39	2.4946	26 55 17.1	4.257
18	5 26 15.28	2.6211	27 2 3.1	4.179	18	7 30 18.88	2.4884	26 50 56.9	4.416
19	5 28 52.58	2.6221	27 6 8.2	3.993	19	7 32 48.00	2.4822	26 46 27.2	4.574
20	5 31 29.94	2.6230	27 10 2.2	3.807	20	7 35 16.75	2.4760	26 41 48.1	4.730
21	5 34 7.34	2.6237	27 13 45.0	3.620	21	7 37 45.13	2.4697	26 36 59.6	4.885
22	5 36 44.78	2.6242	27 17 16.6	3.433	22	7 40 13.12	2.4632	26 32 1.9	5.039
23	5 39 22.25	2.6247	N.27 20 37.0	3.246	23	7 42 40.72	2.4567	N.26 26 55.0	5.192
	SUNDAY 14.					**TUESDAY 16.**			
0	5 41 59.74	2.6249	N.27 23 46.1	3.059	0	7 45 7.93	2.4502	N.26 21 38.9	5.343
1	5 44 37.24	2.6240	27 26 44.0	2.872	1	7 47 34.74	2.4435	26 16 13.8	5.492
2	5 47 14.73	2.6247	27 29 30.7	2.684	2	7 50 1.15	2.4366	26 10 39.8	5.640
3	5 49 52.21	2.6245	27 32 6.1	2.496	3	7 52 27.14	2.4297	26 4 57.0	5.787
4	5 52 29.67	2.6240	27 34 30.3	2.309	4	7 54 52.72	2.4228	25 59 5.4	5.932
5	5 55 7.10	2.6234	27 36 43.3	2.122	5	7 57 17.88	2.4159	25 53 5.1	6.076
6	5 57 44.48	2.6226	27 38 45.0	1.935	6	7 59 42.63	2.4089	25 46 56.3	6.218
7	6 0 21.81	2.6217	27 40 35.5	1.748	7	8 2 6.96	2.4018	25 40 39.0	6.359
8	6 2 59.08	2.6205	27 42 14.8	1.561	8	8 4 30.85	2.3946	25 34 13.2	6.500
9	6 5 36.27	2.6192	27 43 42.8	1.374	9	8 6 54.31	2.3874	25 27 39.0	6.638
10	6 8 13.38	2.6177	27 44 59.7	1.188	10	8 9 17.34	2.3802	25 20 56.6	6.774
11	6 10 50.40	2.6161	27 46 5.4	1.002	11	8 11 39.93	2.3729	25 14 6.1	6.908
12	6 13 27.31	2.6142	27 46 59.9	0.816	12	8 14 2.08	2.3655	25 7 7.7	7.041
13	6 16 4.10	2.6122	27 47 43.3	0.630	13	8 16 23.79	2.3582	25 0 1.3	7.173
14	6 18 40.77	2.6101	27 48 15.6	0.445	14	8 18 45.06	2.3508	24 52 46.9	7.305
15	6 21 17.31	2.6077	27 48 36.8	0.261	15	8 21 5.88	2.3433	24 45 24.7	7.434
16	6 23 53.70	2.6052	27 48 46.9	+0.077	16	8 23 26.25	2.3358	24 37 54.9	7.560
17	6 26 29.94	2.6026	27 48 46.0	−0.106	17	8 25 46.17	2.3283	24 30 17.5	7.686
18	6 29 6.01	2.5998	27 48 34.2	0.289	18	8 28 5.65	2.3208	24 22 32.6	7.810
19	6 31 41.91	2.5967	27 48 11.4	0.471	19	8 30 24.67	2.3132	24 14 40.3	7.933
20	6 34 17.62	2.5936	27 47 37.7	0.653	20	8 32 43.24	2.3056	24 6 40.7	8.055
21	6 36 53.14	2.5903	27 46 53.0	0.835	21	8 35 1.35	2.2980	23 58 33.8	8.174
22	6 39 28.46	2.5868	27 45 57.5	1.015	22	8 37 19.00	2.2904	23 50 19.8	8.292
23	6 42 3.56	2.5832	27 44 51.3	1.193	23	8 39 36.20	2.2829	23 41 58.7	8.409
24	6 44 38.44	2.5794	N.27 43 34.4	1.371	24	8 41 52.95	2.2753	N.23 33 30.7	8.524

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 17.					FRIDAY 19.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	8 41 52.95	2.2753	N.23 33 30.7	8.524	0	10 22 45.98	1.9455	N.14 59 14.5	12.393
1	8 44 9.24	2.2677	23 24 55.8	8.638	1	10 24 42.54	1.9399	14 46 49.4	12.443
2	8 46 25.07	2.2600	23 16 14.2	8.750	2	10 26 38.77	1.9345	14 34 21.4	12.491
3	8 48 40.44	2.2524	23 7 25.9	8.860	3	10 28 34.68	1.9292	14 21 50.5	12.539
4	8 50 55.36	2.2448	22 58 31.0	8.969	4	10 30 30.27	1.9239	14 9 16.7	12.587
5	8 53 9.82	2.2372	22 49 29.6	9.076	5	10 32 25.55	1.9187	13 56 40.1	12.633
6	8 55 23.83	2.2297	22 40 21.8	9.182	6	10 34 20.51	1.9136	13 44 0.8	12.678
7	8 57 37.38	2.2221	22 31 7.7	9.287	7	10 36 15.17	1.9085	13 31 18.8	12.722
8	8 59 50.48	2.2145	22 21 47.4	9.391	8	10 38 9.53	1.9034	13 18 34.2	12.764
9	9 2 3.12	2.2069	22 12 20.9	9.493	9	10 40 3.58	1.8985	13 5 47.1	12.806
10	9 4 15.31	2.1994	22 2 48.3	9.592	10	10 41 57.34	1.8937	12 52 57.5	12.847
11	9 6 27.05	2.1920	21 53 9.9	9.690	11	10 43 50.82	1.8890	12 40 5.4	12.887
12	9 8 38.35	2.1846	21 43 25.6	9.786	12	10 45 44.02	1.8843	12 27 11.0	12.926
13	9 10 49.20	2.1771	21 33 35.5	9.882	13	10 47 36.94	1.8796	12 14 14.3	12.965
14	9 12 59.60	2.1696	21 23 39.7	9.978	14	10 49 29.58	1.8750	12 1 15.3	13.003
15	9 15 9.55	2.1622	21 13 38.2	10.071	15	10 51 21.94	1.8705	11 48 14.0	13.039
16	9 17 19.06	2.1548	21 3 31.2	10.162	16	10 53 14.04	1.8662	11 35 10.6	13.074
17	9 19 28.13	2.1475	20 53 18.8	10.251	17	10 55 5.89	1.8620	11 22 5.1	13.107
18	9 21 36.76	2.1402	20 43 1.1	10.339	18	10 56 57.48	1.8578	11 8 57.7	13.140
19	9 23 44.95	2.1329	20 32 38.1	10.427	19	10 58 48.82	1.8536	10 55 48.3	13.174
20	9 25 52.71	2.1257	20 22 9.9	10.514	20	11 0 39.91	1.8495	10 42 36.9	13.207
21	9 28 0.04	2.1186	20 11 36.5	10.599	21	11 2 30.76	1.8455	10 29 23.5	13.238
22	9 30 6.94	2.1114	20 0 58.1	10.681	22	11 4 21.37	1.8416	10 16 8.3	13.268
23	9 32 13.41	2.1043	N.19 50 14.9	10.762	23	11 6 11.75	1.8377	N.10 2 51.3	13.296
THURSDAY 18.					SATURDAY 20.				
0	9 34 19.46	2.0973	N.19 39 26.8	10.842	0	11 8 1.90	1.8340	N. 9 49 32.7	13.324
1	9 36 25.09	2.0903	19 28 33.9	10.921	1	11 9 51.83	1.8303	9 36 12.4	13.352
2	9 38 30.30	2.0833	19 17 36.3	10.999	2	11 11 41.54	1.8267	9 22 50.4	13.380
3	9 40 35.09	2.0764	19 6 34.1	11.075	3	11 13 31.03	1.8232	9 9 26.8	13.406
4	9 42 39.47	2.0696	18 55 27.4	11.150	4	11 15 20.32	1.8198	8 56 1.7	13.431
5	9 44 43.44	2.0629	18 44 16.2	11.225	5	11 17 9.41	1.8164	8 42 35.1	13.455
6	9 46 47.01	2.0562	18 33 0.5	11.298	6	11 18 58.29	1.8131	8 29 7.1	13.479
7	9 48 50.18	2.0495	18 21 40.5	11.368	7	11 20 46.98	1.8099	8 15 37.7	13.502
8	9 50 52.95	2.0428	18 10 16.4	11.436	8	11 22 35.48	1.8068	8 2 6.9	13.524
9	9 52 55.32	2.0362	17 58 48.2	11.504	9	11 24 23.80	1.8038	7 48 34.8	13.545
10	9 54 57.30	2.0297	17 47 15.9	11.572	10	11 26 11.94	1.8008	7 35 1.5	13.565
11	9 56 58.89	2.0233	17 35 39.5	11.640	11	11 27 59.90	1.7979	7 21 27.0	13.585
12	9 59 0.10	2.0170	17 23 59.1	11.705	12	11 29 47.69	1.7952	7 7 51.3	13.604
13	10 1 0.93	2.0107	17 12 14.9	11.768	13	11 31 35.32	1.7925	6 54 14.5	13.622
14	10 3 1.38	2.0044	17 0 26.9	11.830	14	11 33 22.79	1.7897	6 40 36.6	13.640
15	10 5 1.45	1.9982	16 48 35.3	11.891	15	11 35 10.09	1.7871	6 26 57.7	13.657
16	10 7 1.16	1.9921	16 36 40.0	11.952	16	11 36 57.24	1.7847	6 13 17.8	13.673
17	10 9 0.50	1.9860	16 24 41.1	12.011	17	11 38 44.25	1.7824	5 59 37.0	13.688
18	10 10 59.48	1.9800	16 12 38.7	12.069	18	11 40 31.13	1.7801	5 45 55.3	13.703
19	10 12 58.10	1.9740	16 0 32.9	12.125	19	11 42 17.87	1.7778	5 32 12.7	13.717
20	10 14 56.36	1.9682	15 48 23.7	12.181	20	11 44 4.47	1.7756	5 18 29.3	13.729
21	10 16 54.28	1.9624	15 36 11.2	12.235	21	11 45 50.94	1.7735	5 4 45.2	13.741
22	10 18 51.85	1.9567	15 23 55.5	12.289	22	11 47 37.29	1.7716	4 51 0.4	13.753
23	10 20 49.08	1.9511	15 11 36.6	12.342	23	11 49 23.53	1.7697	4 37 14.8	13.765
24	10 22 45.98	1.9455	N.14 59 14.5	12.393	24	11 51 9.65	1.7678	N. 4 23 28.6	13.775

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 21.			
	h m s	s	° ′ ″	″
0	11 51 9.65	1.7678	N. 4 23 28.6	13.775
1	11 52 55.66	1.7660	4 9 41.8	13.785
2	11 54 41.57	1.7643	3 55 54.4	13.794
3	11 56 27.38	1.7627	3 42 6.5	13.803
4	11 58 13.10	1.7612	3 28 18.1	13.810
5	11 59 58.73	1.7597	3 14 29.3	13.817
6	12 1 44.27	1.7583	3 0 40.1	13.824
7	12 3 29.73	1.7571	2 46 50.5	13.830
8	12 5 15.12	1.7559	2 33 0.6	13.835
9	12 7 0.44	1.7547	2 19 10.4	13.840
10	12 8 45.69	1.7537	2 5 19.9	13.844
11	12 10 30.88	1.7527	1 51 29.2	13.846
12	12 12 16.02	1.7519	1 37 38.4	13.848
13	12 14 1.11	1.7511	1 23 47.5	13.850
14	12 15 46.15	1.7503	1 9 56.4	13.852
15	12 17 31.14	1.7496	0 56 5.3	13.852
16	12 19 16.10	1.7490	0 42 14.2	13.852
17	12 21 1.03	1.7485	0 28 23.1	13.851
18	12 22 45.92	1.7480	0 14 32.1	13.849
19	12 24 30.79	1.7477	N. 0 0 41.2	13.847
20	12 26 15.65	1.7475	S. 0 13 9.6	13.844
21	12 28 0.50	1.7474	0 27 0.1	13.840
22	12 29 45.34	1.7473	0 40 50.4	13.837
23	12 31 30.17	1.7472	S. 0 54 40.5	13.834
	MONDAY 22.			
0	12 33 15.00	1.7472	S. 1 8 30.4	13.828
1	12 34 59.84	1.7474	1 22 19.9	13.822
2	12 36 44.69	1.7476	1 36 9.0	13.814
3	12 38 29.55	1.7478	1 49 57.6	13.807
4	12 40 14.43	1.7482	2 3 45.8	13.799
5	12 41 59.34	1.7487	2 17 33.5	13.792
6	12 43 44.27	1.7492	2 31 20.8	13.783
7	12 45 29.24	1.7498	2 45 7.5	13.773
8	12 47 14.25	1.7504	2 58 53.5	13.762
9	12 48 59.29	1.7511	3 12 38.9	13.751
10	12 50 44.38	1.7520	3 26 23.7	13.740
11	12 52 29.53	1.7530	3 40 7.7	13.728
12	12 54 14.74	1.7540	3 53 51.0	13.715
13	12 56 0.01	1.7550	4 7 33.5	13.701
14	12 57 45.34	1.7560	4 21 15.1	13.687
15	12 59 30.73	1.7572	4 34 55.9	13.673
16	13 1 16.20	1.7586	4 48 35.8	13.657
17	13 3 1.76	1.7600	5 2 14.7	13.640
18	13 4 47.40	1.7614	5 15 52.6	13.623
19	13 6 33.13	1.7629	5 29 29.5	13.606
20	13 8 18.95	1.7645	5 43 5.3	13.588
21	13 10 4.87	1.7662	5 56 40.0	13.568
22	13 11 50.89	1.7679	6 10 13.5	13.548
23	13 13 37.02	1.7697	6 23 45.8	13.529
24	13 15 23.26	1.7716	S. 6 37 17.0	13.509

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 23.			
	h m s	s	° ′ ″	″
0	13 15 23.26	1.7716	S. 6 37 17.0	13.509
1	13 17 9.62	1.7736	6 50 46.9	13.487
2	13 18 56.09	1.7756	7 4 15.4	13.464
3	13 20 42.69	1.7777	7 17 42.5	13.441
4	13 22 29.42	1.7799	7 31 8.2	13.418
5	13 24 16.29	1.7822	7 44 32.6	13.394
6	13 26 3.29	1.7845	7 57 55.5	13.369
7	13 27 50.43	1.7869	8 11 16.8	13.342
8	13 29 37.72	1.7895	8 24 36.6	13.315
9	13 31 25.17	1.7921	8 37 54.7	13.288
10	13 33 12.77	1.7947	8 51 11.2	13.261
11	13 35 0.53	1.7974	9 4 26.0	13.232
12	13 36 48.46	1.8002	9 17 39.0	13.202
13	13 38 36.56	1.8030	9 30 50.2	13.172
14	13 40 24.83	1.8059	9 43 59.6	13.142
15	13 42 13.27	1.8089	9 57 7.2	13.111
16	13 44 1.90	1.8120	10 10 12.8	13.078
17	13 45 50.72	1.8152	10 23 16.4	13.044
18	13 47 39.73	1.8184	10 36 18.0	13.010
19	13 49 28.93	1.8217	10 49 17.5	12.975
20	13 51 18.34	1.8251	11 2 14.9	12.940
21	13 53 7.95	1.8286	11 15 10.2	12.904
22	13 54 57.77	1.8321	11 28 3.3	12.866
23	13 56 47.80	1.8357	S. 11 40 54.1	12.828
	WEDNESDAY 24.			
0	13 58 38.05	1.8393	S. 11 53 42.6	12.788
1	14 0 28.52	1.8430	12 6 28.7	12.748
2	14 2 19.22	1.8468	12 19 12.4	12.708
3	14 4 10.14	1.8507	12 31 53.7	12.667
4	14 6 1.30	1.8547	12 44 32.5	12.625
5	14 7 52.70	1.8587	12 57 8.7	12.582
6	14 9 44.34	1.8627	13 9 42.3	12.538
7	14 11 36.22	1.8668	13 22 13.2	12.493
8	14 13 28.36	1.8710	13 34 41.4	12.448
9	14 15 20.75	1.8753	13 47 6.9	12.402
10	14 17 13.40	1.8797	13 59 29.6	12.354
11	14 19 6.31	1.8841	14 11 49.4	12.305
12	14 20 59.49	1.8886	14 24 6.2	12.255
13	14 22 52.95	1.8931	14 36 20.0	12.205
14	14 24 46.67	1.8976	14 48 30.8	12.155
15	14 26 40.66	1.9022	15 0 38.6	12.103
16	14 28 34.93	1.9070	15 12 43.2	12.050
17	14 30 29.50	1.9118	15 24 44.6	11.996
18	14 32 24.36	1.9167	15 36 42.7	11.941
19	14 34 19.51	1.9216	15 48 37.5	11.885
20	14 36 14.95	1.9265	16 0 28.9	11.829
21	14 38 10.69	1.9316	16 12 16.9	11.771
22	14 40 6.74	1.9367	16 24 1.4	11.712
23	14 42 3.10	1.9418	16 35 42.3	11.651
24	14 43 59.76	1.9469	S. 16 47 19.5	11.590

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 43 59.76	1.9469	S.16 47 19.5	11.590
1	14 45 56.73	1.9522	16 58 53.1	11.529
2	14 47 54.03	1.9576	17 10 23.0	11.466
3	14 49 51.65	1.9630	17 21 49.0	11.402
4	14 51 49.59	1.9684	17 33 11.2	11.337
5	14 53 47.86	1.9739	17 44 29.4	11.271
6	14 55 46.46	1.9794	17 55 43.7	11.204
7	14 57 45.39	1.9850	18 6 53.9	11.136
8	14 59 44.66	1.9906	18 18 0.0	11.067
9	15 1 44.26	1.9962	18 29 1.9	10.996
10	15 3 44.21	2.0020	18 39 59.5	10.925
11	15 5 44.51	2.0078	18 50 52.9	10.853
12	15 7 45.15	2.0136	19 1 41.9	10.780
13	15 9 46.14	2.0195	19 12 26.4	10.705
14	15 11 47.49	2.0254	19 23 6.4	10.629
15	15 13 49.19	2.0313	19 33 41.8	10.552
16	15 15 51.25	2.0373	19 44 12.6	10.474
17	15 17 53.67	2.0434	19 54 38.7	10.394
18	15 19 56.46	2.0495	20 4 59.9	10.313
19	15 21 59.61	2.0556	20 15 16.3	10.232
20	15 24 3.13	2.0617	20 25 27.8	10.149
21	15 26 7.01	2.0678	20 35 34.2	10.065
22	15 28 11.26	2.0740	20 45 35.6	9.980
23	15 30 15.89	2.0803	S.20 55 31.9	9.894

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 32 20.90	2.0866	S.21 5 22.9	9.807
1	15 34 26.28	2.0929	21 15 8.7	9.719
2	15 36 32.04	2.0992	21 24 49.1	9.629
3	15 38 38.18	2.1055	21 34 24.1	9.537
4	15 40 44.70	2.1118	21 43 53.6	9.445
5	15 42 51.60	2.1182	21 53 17.5	9.351
6	15 44 58.89	2.1246	22 2 35.7	9.256
7	15 47 6.56	2.1310	22 11 48.2	9.160
8	15 49 14.61	2.1374	22 20 55.0	9.063
9	15 51 23.05	2.1439	22 29 55.9	8.965
10	15 53 31.88	2.1504	22 38 50.8	8.865
11	15 55 41.10	2.1568	22 47 39.7	8.764
12	15 57 50.70	2.1632	22 56 22.5	8.662
13	16 0 0.69	2.1697	23 4 59.1	8.559
14	16 2 11.07	2.1762	23 13 29.5	8.455
15	16 4 21.84	2.1827	23 21 53.6	8.349
16	16 6 33.00	2.1892	23 30 11.3	8.241
17	16 8 44.55	2.1957	23 38 22.5	8.132
18	16 10 56.48	2.2021	23 46 27.1	8.022
19	16 13 8.80	2.2086	23 54 25.1	7.911
20	16 15 21.51	2.2151	24 2 16.4	7.799
21	16 17 34.61	2.2216	24 10 1.0	7.686
22	16 19 48.10	2.2280	24 17 38.7	7.571
23	16 22 1.97	2.2343	24 25 9.5	7.454
24	16 24 16.22	2.2407	S.24 32 33.2	7.337

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 24 16.22	2.2407	S.24 32 33.2	7.337
1	16 26 30.86	2.2471	24 39 49.9	7.218
2	16 28 45.88	2.2534	24 46 59.5	7.098
3	16 31 1.27	2.2597	24 54 1.8	6.977
4	16 33 17.04	2.2660	25 0 56.8	6.855
5	16 35 33.19	2.2722	25 7 44.4	6.732
6	16 37 49.71	2.2784	25 14 24.6	6.606
7	16 40 6.60	2.2846	25 20 57.3	6.481
8	16 42 23.86	2.2908	25 27 22.4	6.353
9	16 44 41.50	2.2969	25 33 39.7	6.224
10	16 46 59.50	2.3029	25 39 49.3	6.095
11	16 49 17.85	2.3089	25 45 51.1	5.964
12	16 51 36.56	2.3148	25 51 45.0	5.832
13	16 53 55.63	2.3207	25 57 30.9	5.699
14	16 56 15.05	2.3266	26 3 8.8	5.565
15	16 58 34.82	2.3323	26 8 38.7	5.430
16	17 0 54.93	2.3380	26 14 0.4	5.293
17	17 3 15.38	2.3437	26 19 13.8	5.154
18	17 5 36.18	2.3493	26 24 18.9	5.015
19	17 7 57.31	2.3548	26 29 15.6	4.875
20	17 10 18.76	2.3602	26 34 3.9	4.733
21	17 12 40.54	2.3656	26 38 43.6	4.590
22	17 15 2.64	2.3709	26 43 14.7	4.447
23	17 17 25.05	2.3762	S.26 47 37.2	4.303

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 19 47.78	2.3813	S.26 51 51.1	4.158
1	17 22 10.81	2.3863	26 55 56.2	4.011
2	17 24 34.14	2.3912	26 59 52.4	3.862
3	17 26 57.76	2.3961	27 3 39.6	3.713
4	17 29 21.67	2.4009	27 7 17.9	3.564
5	17 31 45.87	2.4056	27 10 47.3	3.414
6	17 34 10.35	2.4102	27 14 7.6	3.262
7	17 36 35.10	2.4147	27 17 18.7	3.109
8	17 39 0.11	2.4190	27 20 20.7	2.955
9	17 41 25.38	2.4233	27 23 13.4	2.801
10	17 43 50.91	2.4275	27 25 56.8	2.646
11	17 46 16.68	2.4316	27 28 30.9	2.490
12	17 48 42.70	2.4356	27 30 55.6	2.333
13	17 51 8.95	2.4394	27 33 10.8	2.175
14	17 53 35.43	2.4431	27 35 16.6	2.017
15	17 56 2.13	2.4467	27 37 12.8	1.857
16	17 58 29.04	2.4502	27 38 59.4	1.697
17	18 0 56.16	2.4536	27 40 36.4	1.537
18	18 3 23.48	2.4569	27 42 3.8	1.376
19	18 5 50.99	2.4600	27 43 21.5	1.213
20	18 8 18.68	2.4631	27 44 29.4	1.049
21	18 10 46.56	2.4661	27 45 27.4	0.885
22	18 13 14.61	2.4688	27 46 15.6	0.722
23	18 15 42.81	2.4713	27 46 54.1	9.559
24	18 18 11.16	2.4738	S.27 47 22.7	0.394

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 29.					TUESDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 18 11.16	2.4738	S.27 47 22.7	0.394	0	19 17 57.16	2.4936	S.27 8 29.3	3.647
1	18 20 39.66	2.4762	27 47 41.4	0.228	1	19 20 26.75	2.4927	27 4 45.5	3.815
2	18 23 8.30	2.4785	27 47 50.0	−0.061	2	19 22 56.29	2.4917	27 0 51.5	3.983
3	18 25 37.08	2.4807	27 47 48.7	+0.105	3	19 25 25.76	2.4906	26 56 47.5	4.150
4	18 28 5.98	2.4826	27 47 37.4	0.271	4	19 27 55.16	2.4894	26 52 33.5	4.317
5	18 30 34.99	2.4844	27 47 16.1	0.438	5	19 30 24.49	2.4881	26 48 9.4	4.484
6	18 33 4.11	2.4861	27 46 44.8	0.606	6	19 32 53.73	2.4866	26 43 35.3	4.651
7	18 35 33.33	2.4877	27 46 3.4	0.774	7	19 35 22.88	2.4850	26 38 51.2	4.817
8	18 38 2.64	2.4891	27 45 11.9	0.942	8	19 37 51.93	2.4832	26 33 57.2	4.982
9	18 40 32.03	2.4904	27 44 10.3	1.110	9	19 40 20.86	2.4813	26 28 53.3	5.147
10	18 43 1.49	2.4916	27 42 58.6	1.279	10	19 42 49.68	2.4793	26 23 39.5	5.312
11	18 45 31.02	2.4927	27 41 36.7	1.448	11	19 45 18.38	2.4772	26 18 15.8	5.477
12	18 48 0.61	2.4936	27 40 4.8	1.617	12	19 47 46.95	2.4751	26 12 42.2	5.641
13	18 50 30.25	2.4943	27 38 22.7	1.786	13	19 50 15.39	2.4728	26 6 58.8	5.804
14	18 52 59.93	2.4948	27 36 30.4	1.955	14	19 52 43.69	2.4703	26 1 5.7	5.966
15	18 55 29.63	2.4953	27 34 28.0	2.124	15	19 55 11.83	2.4678	25 55 2.9	6.128
16	18 57 59.36	2.4957	27 32 15.5	2.293	16	19 57 39.82	2.4652	25 48 50.4	6.288
17	19 0 29.11	2.4960	27 29 52.7	2.463	17	20 0 7.65	2.4625	25 42 28.3	6.448
18	19 2 58.88	2.4961	27 27 19.8	2.633	18	20 2 35.32	2.4597	25 35 56.6	6.607
19	19 5 28.65	2.4960	27 24 36.7	2.802	19	20 5 2.82	2.4568	25 29 15.4	6.766
20	19 7 58.40	2.4957	27 21 43.5	2.971	20	20 7 30.14	2.4537	25 22 24.6	6.924
21	19 10 28.13	2.4953	27 18 40.2	3.140	21	20 9 57.27	2.4506	25 15 24.4	7.081
22	19 12 57.84	2.4949	27 15 26.7	3.309	22	20 12 24.21	2.4474	25 8 14.8	7.238
23	19 15 27.52	2.4943	27 12 3.0	3.478	23	20 14 50.96	2.4441	25 0 55.8	7.394
24	19 17 57.16	2.4936	S.27 8 29.3	3.647	24	20 17 17.51	2.4407	S.24 53 27.5	7.549

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, ...	7	1	18.5
● New Moon, ...	13	18	52.6
☽ First Quarter, ...	21	8	0.7
○ Full Moon, ...	29	6	48.0

	d	h
☾ Perigee, ...	10	13.7
☾ Apogee, ...	22	12.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Jupiter	W.	93° 0′ 25″	2743	94° 36′ 8″	2735	96° 12′ 2″	2725	97° 48′ 8″	2716
	Spica	W.	62 51 38	2735	64 27 32	2726	66 3 37	2716	67 39 55	2707
	Antares	W.	16 58 18	2747	18 33 56	2736	20 9 48	2725	21 45 55	2713
	α Aquilæ	E.	47 14 11	4739	46 13 44	4844	45 14 44	4962	44 17 19	5093
	Saturn	E.	49 18 20	2744	47 42 39	2737	46 6 48	2729	44 30 47	2722
	Fomalhaut	E.	67 12 15	2945	65 40 53	2942	64 9 27	2939	62 37 57	2937
	α Pegasi	E.	88 13 16	3085	86 44 48	3077	85 16 10	3069	83 47 23	3063
2	Jupiter	W.	105 51 34	2673	107 28 50	2665	109 6 17	2656	110 43 56	2647
	Spica	W.	75 44 26	2663	77 21 56	2654	78 59 38	2645	80 37 32	2636
	Antares	W.	29 50 4	2663	31 27 34	2654	33 5 16	2644	34 43 11	2635
	Saturn	E.	36 28 16	2688	34 51 20	2682	33 14 16	2677	31 37 5	2673
	Fomalhaut	E.	55 0 9	2939	53 28 39	2942	51 57 13	2946	50 25 53	2954
	α Pegasi	E.	76 21 39	3039	74 52 14	3035	73 22 45	3034	71 53 14	3032
3	Spica	W.	88 49 59	2593	90 29 4	2585	92 8 20	2576	93 47 48	2567
	Antares	W.	42 55 49	2591	44 34 57	2581	46 14 18	2573	47 53 50	2564
	Fomalhaut	E.	42 52 3	3015	41 22 9	3036	39 52 41	3060	38 23 42	3089
	α Pegasi	E.	64 25 37	3040	62 56 14	3046	61 26 58	3052	59 57 50	3060
	α Arietis	E.	105 24 50	2655	103 47 10	2646	102 9 17	2637	100 31 12	2627
4	Spica	W.	102 8 1	2526	103 48 38	2517	105 29 27	2510	107 10 27	2502
	Antares	W.	56 14 28	2522	57 55 11	2513	59 36 6	2504	61 17 13	2497
	α Pegasi	E.	52 35 19	3129	51 7 44	3151	49 40 36	3175	48 13 57	3203
	α Arietis	E.	92 17 40	2583	90 38 22	2575	88 58 53	2566	87 19 12	2559
	Sun	E.	128 58 26	2849	127 25 2	2840	125 51 26	2831	124 17 38	2822
5	Antares	W.	69 45 41	2455	71 27 58	2447	73 10 26	2438	74 53 6	2430
	α Aquilæ	W.	38 28 17	6110	39 12 22	5815	39 59 33	5553	40 49 40	5321
	α Pegasi	E.	41 10 48	3420	39 48 54	3483	38 28 11	3557	37 8 50	3641
	α Arietis	E.	78 58 3	2520	77 17 18	2512	75 36 22	2505	73 55 16	2499
	Sun	E.	116 25 41	2776	114 50 42	2768	113 15 32	2758	111 40 9	2750
6	Antares	W.	83 29 22	2389	85 13 12	2382	86 57 13	2373	88 41 26	2366
	α Aquilæ	W.	45 38 35	4460	46 43 2	4334	47 49 23	4219	48 57 31	4113
	Saturn	W.	18 2 13	2504	19 43 21	2477	21 25 6	2455	23 7 23	2434
	α Arietis	E.	65 27 26	2467	63 45 26	2461	62 3 18	2455	60 21 2	2450
	Sun	E.	103 40 21	2706	102 3 49	2697	100 27 5	2689	98 50 10	2680
7	Antares	W.	97 25 19	2327	99 10 39	2320	100 56 10	2312	102 41 52	2304
	α Aquilæ	W.	55 1 22	3702	56 18 7	3638	57 36 0	3580	58 54 56	3525
	Saturn	W.	31 44 59	2362	33 29 29	2350	35 14 16	2339	36 59 18	2329
	α Arietis	E.	51 48 10	2432	50 5 21	2431	48 22 30	2430	46 39 38	2430
	Sun	E.	90 42 45	2638	89 4 42	2630	87 26 28	2623	85 48 4	2615
8	α Aquilæ	W.	65 43 16	3310	67 7 16	3276	68 31 55	3245	69 57 11	3217
	Saturn	W.	45 47 59	2285	47 34 21	2277	49 20 55	2269	51 7 40	2262
	Fomalhaut	W.	32 35 28	2944	34 6 51	2876	35 39 40	2818	37 13 45	2767
	α Arietis	E.	38 5 46	2448	36 23 20	2458	34 41 7	2470	32 59 11	2485
	Sun	E.	77 33 29	2579	75 54 5	2572	74 14 31	2565	72 34 48	2559
9	α Aquilæ	W.	77 11 6	3107	78 39 7	3091	80 7 28	3077	81 36 6	3064
	Saturn	W.	60 3 57	2230	61 51 40	2225	63 39 31	2220	65 27 29	2214
	Fomalhaut	W.	45 18 30	2588	46 57 42	2562	48 37 29	2539	50 17 48	2518
	Sun	E.	64 14 11	2530	62 33 40	2526	60 53 3	2522	59 12 20	2517

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Jupiter	W.	99° 24′ 26″	2707	101° 0′ 56″	2699	102° 37′ 37″	2690	104° 14′ 30″	2682
	Spica	W.	69 16 25	2698	70 53 7	2689	72 30 1	2681	74 7 7	2671
	Antares	W.	23 22 17	2703	24 58 53	2692	26 35 43	2682	28 12 47	2672
	α Aquilæ	E.	43 21 36	5240	42 27 44	5402	41 35 51	5586	40 46 7	5795
	Saturn	E.	42 54 36	2714	41 18 15	2707	39 41 44	2700	38 5 4	2694
	Fomalhaut	E.	61 6 25	2935	59 34 51	2935	58 3 16	2935	56 31 42	2936
	α Pegasi	E.	82 18 28	3056	80 49 25	3051	79 20 15	3046	77 50 59	3043
2	Jupiter	W.	112 21 47	2639	113 59 49	2631	115 38 2	2622	117 16 27	2614
	Spica	W.	82 15 38	2627	83 53 56	2619	85 32 25	2610	87 11 6	2601
	Antares	W.	36 21 18	2626	37 59 37	2617	39 38 9	2608	41 16 53	2599
	Saturn	E.	29 59 49	2669	28 22 28	2666	26 45 3	2665	25 7 36	2664
	Fomalhaut	E.	48 54 42	2962	47 23 41	2971	45 52 52	2983	44 22 18	2998
	α Pegasi	E.	70 23 41	3032	68 54 8	3032	67 24 35	3034	65 55 4	3037
3	Spica	W.	95 27 28	2559	97 7 19	2551	98 47 21	2543	100 27 35	2534
	Antares	W.	49 33 34	2556	51 13 30	2547	52 53 38	2539	54 33 57	2530
	Fomalhaut	E.	36 55 19	3123	35 27 37	3163	34 0 44	3212	32 34 49	3270
	α Pegasi	E.	58 28 51	3069	57 0 4	3082	55 31 32	3095	54 3 16	3110
	α Arietis	E.	98 52 54	2618	97 14 24	2609	95 35 41	2600	93 56 46	2592
4	Spica	W.	108 51 38	2493	110 33 1	2485	112 14 35	2477	113 56 20	2469
	Antares	W.	62 58 31	2488	64 40 1	2480	66 21 43	2472	68 3 36	2463
	α Pegasi	E.	46 47 51	3235	45 22 23	3273	43 57 40	3315	42 33 46	3364
	α Arietis	E.	85 39 20	2551	83 59 17	2543	82 19 3	2535	80 38 38	2527
	Sun	E.	122 43 39	2812	121 9 27	2804	119 35 4	2794	118 0 28	2785
5	Antares	W.	76 35 58	2422	78 19 2	2414	80 2 17	2405	81 45 44	2398
	α Aquilæ	W.	41 42 32	5112	42 38 0	4923	43 35 56	4754	44 36 10	4600
	α Pegasi	E.	35 51 0	3737	34 34 54	3854	33 20 47	3988	32 8 56	4145
	α Arietis	E.	72 14 1	2492	70 32 36	2485	68 51 1	2479	67 9 18	2472
	Sun	E.	110 4 35	2741	108 28 49	2732	106 52 51	2723	105 16 42	2714
6	Antares	W.	90 25 50	2358	92 10 25	2350	93 55 12	2342	95 40 10	2335
	α Aquilæ	W.	50 7 20	4017	51 18 43	3927	52 31 35	3846	53 45 50	3771
	Saturn	W.	24 50 9	2417	26 33 20	2401	28 16 53	2387	30 0 47	2374
	α Arietis	E.	58 38 39	2446	56 56 10	2442	55 13 35	2438	53 30 55	2435
	Sun	E.	97 13 3	2672	95 35 45	2663	93 58 16	2655	92 20 36	2647
7	Antares	W.	104 27 45	2298	106 13 48	2290	108 0 2	2283	109 46 26	2277
	α Aquilæ	W.	60 14 52	3476	61 35 43	3429	62 57 27	3386	64 19 59	3347
	Saturn	W.	38 44 35	2320	40 30 6	2310	42 15 51	2301	44 1 49	2293
	α Arietis	E.	44 56 46	2431	43 13 55	2432	41 31 6	2436	39 48 22	2441
	Sun	E.	84 9 29	2607	82 30 44	2600	80 51 49	2593	79 12 44	2585
8	α Aquilæ	W.	71 23 0	3190	72 49 21	3167	74 16 10	3144	75 43 26	3124
	Saturn	W.	52 54 36	2255	54 41 42	2248	56 28 58	2242	58 16 23	2236
	Fomalhaut	W.	38 48 56	2722	40 25 6	2684	42 2 8	2649	43 39 57	2616
	α Arietis	E.	31 17 37	2504	29 36 30	2530	27 55 58	2561	26 16 10	2600
	Sun	E.	70 54 57	2553	69 14 58	2547	67 34 50	2541	65 54 34	2536
9	α Aquilæ	W.	83 5 0	3053	84 34 7	3045	86 3 24	3038	87 32 50	3032
	Saturn	W.	67 15 35	2210	69 3 48	2206	70 52 6	2203	72 40 29	2200
	Fomalhaut	W.	51 58 36	2499	53 39 50	2482	55 21 29	2467	57 3 29	2453
	Sun	E.	57 31 31	2514	55 50 37	2511	54 9 39	2508	52 28 37	2505

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	α Aquilæ	W.	89° 2′ 23″	3029	90° 32′ 0″	3026	92° 1′ 40″	3026	93° 31′ 20″	3029
	Saturn	W.	74 28 57	2197	76 17 29	2194	78 6 5	2192	79 54 45	2190
	Fomalhaut	W.	58 45 49	2441	60 28 26	2430	62 11 18	2420	63 54 24	2411
	α Pegasi	W.	41 17 23	3086	42 45 49	3025	44 15 31	2970	45 46 21	2921
	Sun	E.	50 47 31	2504	49 6 23	2502	47 25 12	2501	45 44 0	2500
11	α Aquilæ	W.	100 58 17	3065	102 27 9	3078	103 55 45	3095	105 24 1	3113
	Saturn	W.	88 58 31	2188	90 47 17	2189	92 36 1	2190	94 24 43	2192
	Fomalhaut	W.	72 32 29	2384	74 16 27	2382	76 0 28	2380	77 44 32	2380
	α Pegasi	W.	53 33 56	2749	55 9 31	2725	56 45 37	2705	58 22 10	2687
	Sun	E.	37 18 5	2507	35 37 2	2510	33 56 3	2515	32 15 10	2520
16	Sun	W.	28 46 18	2921	30 18 10	2934	31 49 46	2947	33 21 5	2961
	Regulus	E.	34 51 26	2595	33 12 24	2613	31 33 47	2633	29 55 37	2654
	Jupiter	E.	59 32 48	2588	57 53 36	2603	56 14 45	2618	54 36 15	2635
	Spica	E.	88 48 13	2563	87 8 27	2579	85 29 3	2594	83 50 0	2610
17	Sun	W.	40 53 6	3036	42 22 34	3052	43 51 43	3067	45 20 33	3082
	Jupiter	E.	46 29 9	2714	44 52 48	2730	43 16 48	2746	41 41 9	2761
	Spica	E.	75 40 2	2687	74 3 5	2703	72 26 29	2718	70 50 13	2733
18	Sun	W.	52 40 6	3158	54 7 6	3173	55 33 48	3187	57 0 13	3200
	Venus	W.	23 33 29	3279	24 58 5	3290	26 22 28	3301	27 46 38	3313
	Jupiter	E.	33 47 58	2838	32 14 19	2853	30 41 0	2868	29 8 0	2883
	Spica	E.	62 53 51	2808	61 19 33	2821	59 45 33	2835	58 11 51	2848
	Antares	E.	108 46 31	2801	107 12 5	2815	105 37 56	2828	104 4 5	2842
19	Sun	W.	64 8 15	3267	65 33 5	3280	66 57 40	3292	68 22 1	3303
	Venus	W.	34 44 2	3372	36 6 51	3384	37 29 26	3395	38 51 48	3406
	Spica	E.	50 27 39	2914	48 55 38	2926	47 23 52	2938	45 52 21	2950
	Antares	E.	96 19 4	2905	94 46 52	2916	93 14 54	2927	91 43 10	2939
20	Sun	W.	75 20 35	3355	76 43 43	3365	78 6 40	3373	79 29 27	3381
	Venus	W.	45 40 42	3454	47 1 57	3463	48 23 2	3472	49 43 57	3480
	Regulus	W.	16 30 10	3123	17 57 52	3111	19 25 48	3103	20 53 54	3097
	Spica	E.	38 18 16	3002	36 48 6	3012	35 18 8	3022	33 48 22	3031
	Antares	E.	84 7 47	2987	82 37 18	2996	81 7 0	3004	79 36 52	3011
21	Sun	W.	86 21 14	3415	87 43 14	3420	89 5 8	3425	90 26 56	3429
	Venus	W.	56 26 31	3513	57 46 41	3517	59 6 46	3522	60 26 46	3525
	Regulus	W.	28 15 25	3091	29 43 46	3091	31 12 6	3091	32 40 26	3092
	Antares	E.	72 8 19	3043	70 38 59	3047	69 9 44	3052	67 40 35	3056
22	Sun	W.	97 14 57	3443	98 36 25	3444	99 57 52	3445	101 19 18	3445
	Venus	W.	67 5 52	3538	68 25 34	3539	69 45 15	3539	71 4 56	3539
	Regulus	W.	40 1 57	3093	41 30 15	3092	42 58 34	3091	44 26 54	3090
	Antares	E.	60 15 50	3068	58 47 1	3069	57 18 13	3069	55 49 26	3069
	α Aquilæ	E.	107 49 29	4003	106 37 52	3988	105 26 1	3974	104 13 56	3962
23	Sun	W.	108 6 36	3438	109 28 9	3436	110 49 45	3433	112 11 24	3429
	Venus	W.	77 43 34	3531	79 3 24	3527	80 23 18	3524	81 43 16	3520
	Regulus	W.	51 49 7	3078	53 17 43	3074	54 46 24	3071	56 15 9	3067
	Jupiter	W.	26 14 59	3109	27 42 58	3105	29 11 1	3101	30 39 9	3096
	Antares	E.	48 25 21	3063	46 56 26	3060	45 27 28	3057	43 58 26	3055
	α Aquilæ	E.	98 10 48	3914	96 57 42	3906	95 44 28	3898	94 31 6	3890

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	α Aquilæ	W.	95° 0′ 57″	3033	96° 30′ 29″	3038	97° 59′ 55″	3045	99° 29′ 12″	3055
	Saturn	W.	81 43 28	2188	83 32 13	2188	85 20 59	2188	87 9 45	2188
	Fomalhaut	W.	65 37 43	2404	67 21 12	2398	69 4 50	2392	70 48 36	2387
	α Pegasi	W.	47 18 13	2878	48 51 0	2840	50 24 36	2806	51 58 56	2775
	Sun	E.	44 2 47	2500	42 21 34	2501	40 40 22	2502	38 59 12	2504
11	α Aquilæ	W.	106 51 55	3133	108 19 25	3155	109 46 28	3181	111 13 0	3210
	Saturn	W.	96 13 22	2195	98 1 57	2198	99 50 28	2200	101 38 55	2204
	Fomalhaut	W.	79 28 36	2380	81 12 40	2380	82 56 43	2382	84 40 43	2384
	α Pegasi	W.	59 59 7	2672	61 36 25	2658	63 14 1	2646	64 51 53	2637
	Sun	E.	30 34 25	2527	28 53 49	2534	27 13 23	2543	25 33 9	2553
16	Sun	W.	34 52 7	2976	36 22 50	2991	37 53 14	3006	39 23 19	3021
	Regulus	E.	28 17 55	2675	26 40 42	2697	25 3 58	2720	23 27 45	2745
	Jupiter	E.	52 58 7	2650	51 20 20	2666	49 42 55	2682	48 5 51	2698
	Spica	E.	82 11 18	2625	80 32 57	2641	78 54 58	2657	77 17 20	2672
17	Sun	W.	46 49 5	3097	48 17 18	3113	49 45 12	3128	51 12 48	3143
	Jupiter	E.	40 5 50	2777	38 30 52	2792	36 56 14	2808	35 21 56	2823
	Spica	E.	69 14 17	2748	67 38 41	2763	66 3 25	2778	64 28 28	2793
18	Sun	W.	58 26 22	3214	59 52 14	3228	61 17 50	3242	62 43 10	3254
	Venus	W.	29 10 34	3325	30 34 16	3337	31 57 45	3349	33 21 0	3360
	Jupiter	E.	27 35 19	2898	26 2 57	2912	24 30 54	2927	22 59 9	2942
	Spica	E.	56 38 26	2862	55 5 19	2876	53 32 29	2889	51 59 56	2901
	Antares	E.	102 30 32	2855	100 57 16	2868	99 24 16	2880	97 51 32	2893
19	Sun	W.	69 46 9	3314	71 10 4	3325	72 33 46	3336	73 57 16	3345
	Venus	W.	40 13 58	3416	41 35 56	3427	42 57 42	3437	44 19 17	3446
	Spica	E.	44 21 5	2961	42 50 3	2971	41 19 14	2982	39 48 39	2992
	Antares	E.	90 11 40	2949	88 40 23	2959	87 9 19	2969	85 38 27	2978
20	Sun	W.	80 52 5	3389	82 14 34	3396	83 36 55	3403	84 59 8	3409
	Venus	W.	51 4 43	3488	52 25 21	3494	53 45 52	3501	55 6 15	3507
	Regulus	W.	22 22 7	3093	23 50 25	3091	25 18 45	3091	26 47 5	3091
	Spica	E.	32 18 48	3040	30 49 25	3048	29 20 12	3057	27 51 10	3065
	Antares	E.	78 6 53	3018	76 37 3	3025	75 7 21	3030	73 37 46	3037
21	Sun	W.	91 48 40	3433	93 10 19	3436	94 31 55	3439	95 53 27	3441
	Venus	W.	61 46 42	3529	63 6 34	3533	64 26 22	3535	65 46 8	3536
	Regulus	W.	34 8 45	3093	35 37 3	3093	37 5 21	3093	38 33 39	3093
	Antares	E.	66 11 31	3059	64 42 31	3061	63 13 34	3065	61 44 41	3066
22	Sun	W.	102 40 44	3445	104 2 10	3444	105 23 37	3443	106 45 5	3440
	Venus	W.	72 24 37	3538	73 44 19	3537	75 4 2	3535	76 23 47	3534
	Regulus	W.	45 55 16	3088	47 23 40	3087	48 52 6	3084	50 20 35	3082
	Antares	E.	54 20 39	3069	52 51 51	3069	51 23 3	3067	49 54 13	3065
	α Aquilæ	E.	103 1 39	3951	101 49 11	3941	100 36 33	3931	99 23 45	3922
23	Sun	W.	113 33 8	3425	114 54 56	3420	116 16 50	3415	117 38 49	3411
	Venus	W.	83 3 18	3515	84 23 25	3510	85 43 38	3505	87 3 57	3498
	Regulus	W.	57 43 59	3062	59 12 55	3057	60 41 57	3052	62 11 5	3047
	Jupiter	W.	32 7 23	3091	33 35 43	3087	35 4 9	3082	36 32 41	3076
	Antares	E.	42 29 21	3051	41 0 11	3046	39 30 55	3042	38 1 34	3037
	α Aquilæ	E.	93 17 36	3884	92 4 0	3878	90 50 18	3872	89 36 30	3866

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Saturn	E.	113° 44′ 11″	3057	112° 15′ 9″	3054	110° 46′ 3″	3051	109° 16′ 53″	3047
24	Sun	W.	119 0 53	3405	120 23 4	3399	121 45 22	3393	123 7 47	3386
	Venus	W.	88 24 23	3492	89 44 56	3486	91 5 36	3479	92 26 24	3471
	Regulus	W.	63 40 20	3040	65 9 43	3034	66 39 14	3027	68 8 53	3020
	Jupiter	W.	38 1 20	3069	39 30 7	3064	40 59 1	3056	42 28 4	3049
	Antares	E.	36 32 7	3031	35 2 33	3026	33 32 52	3020	32 3 4	3014
	α Aquilæ	E.	88 22 36	3862	87 8 38	3858	85 54 36	3856	84 40 31	3853
	Saturn	E.	101 49 40	3022	100 19 54	3015	98 50 0	3009	97 19 58	3001
25	Sun	W.	130 1 55	3347	131 25 12	3339	132 48 38	3331	134 12 14	3321
	Venus	W.	99 12 42	3427	100 34 28	3417	101 56 25	3408	103 18 33	3398
	Regulus	W.	75 39 29	2980	77 10 7	2970	78 40 57	2962	80 11 58	2953
	Jupiter	W.	49 55 39	3009	51 25 40	3000	52 55 53	2991	54 26 17	2981
	Spica	W.	21 39 49	3011	23 9 48	2997	24 40 4	2985	26 10 36	2972
	α Aquilæ	E.	78 29 37	3850	77 15 26	3852	76 1 17	3855	74 47 11	3858
	Saturn	E.	89 47 28	2962	88 16 28	2953	86 45 16	2944	85 13 53	2935
	Fomalhaut	E.	106 46 6	3168	105 19 19	3157	103 52 18	3145	102 25 3	3133
26	Venus	W.	110 12 14	3342	111 35 37	3330	112 59 14	3319	114 23 4	3306
	Regulus	W.	87 50 6	2901	89 22 23	2891	90 54 53	2880	92 27 37	2869
	Jupiter	W.	62 1 22	2931	63 33 2	2920	65 4 55	2909	66 37 2	2898
	Spica	W.	33 47 15	2909	35 19 22	2898	36 51 44	2886	38 24 21	2873
	α Aquilæ	E.	68 38 3	3897	67 24 40	3909	66 11 29	3922	64 58 32	3939
	Saturn	E.	77 33 58	2885	76 1 20	2875	74 28 29	2864	72 55 24	2853
	Fomalhaut	E.	95 5 19	3076	93 36 40	3065	92 7 47	3054	90 38 41	3043
	α Pegasi	E.	114 57 8	3322	113 33 22	3301	112 9 12	3282	110 44 39	3262
27	Regulus	W.	100 14 54	2813	101 49 5	2801	103 23 32	2789	104 58 14	2778
	Jupiter	W.	74 21 16	2841	75 54 51	2829	77 28 41	2817	79 2 47	2805
	Spica	W.	46 11 23	2812	47 45 35	2800	49 20 3	2788	50 54 47	2775
	α Aquilæ	E.	58 58 39	4058	57 47 56	4090	56 37 45	4128	55 28 10	4169
	Saturn	E.	65 6 26	2798	63 31 55	2786	61 57 9	2775	60 22 8	2764
	Fomalhaut	E.	83 9 49	2989	81 39 23	2979	80 8 44	2969	78 37 53	2960
	α Pegasi	E.	103 36 23	3173	102 9 42	3157	100 42 41	3142	99 15 22	3126
28	Jupiter	W.	86 57 9	2746	88 32 48	2734	90 8 43	2722	91 44 54	2710
	Spica	W.	58 52 29	2714	60 28 50	2702	62 5 27	2690	63 42 20	2678
	α Aquilæ	E.	49 51 37	4458	48 47 8	4538	47 43 49	4626	46 41 47	4724
	Saturn	E.	52 23 21	2707	50 46 51	2696	49 10 6	2686	47 33 7	2675
	Fomalhaut	E.	71 0 44	2916	69 28 46	2909	67 56 39	2903	66 24 24	2897
	α Pegasi	E.	91 54 21	3058	90 25 20	3046	88 56 4	3034	87 26 34	3023
29	Jupiter	W.	99 49 40	2652	101 27 24	2642	103 5 22	2631	104 43 35	2620
	Spica	W.	71 50 44	2620	73 29 12	2609	75 7 55	2597	76 46 54	2586
	Antares	W.	25 56 24	2622	27 34 49	2610	29 13 30	2598	30 52 28	2587
	Saturn	E.	39 24 42	2626	37 46 22	2616	36 7 49	2607	34 29 4	2600
	Fomalhaut	E.	58 41 27	2877	57 8 39	2876	55 35 49	2876	54 2 59	2877
	α Pegasi	E.	79 55 55	2978	78 25 15	2972	76 54 27	2965	75 23 31	2961
30	Spica	W.	85 5 29	2534	86 45 55	2525	88 26 34	2515	90 7 27	2505
	Antares	W.	39 11 5	2533	40 51 32	2522	42 32 14	2512	44 13 10	2503
	Fomalhaut	E.	46 19 59	2910	44 47 53	2924	43 16 5	2941	41 44 38	2960
	α Pegasi	E.	67 47 37	2949	66 16 20	2950	64 45 4	2952	63 13 51	2956
	α Arietis	E.	109 5 43	2598	107 26 45	2587	105 47 32	2576	104 8 4	2565

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23	Saturn	E.	107° 47′ 38″	3043	106° 18′ 18″	3038	104° 48′ 52″	3032	103° 19′ 19″	3027
24	Sun	W.	124 30 19	3379	125 53 0	3372	127 15 49	3364	128 38 47	3355
	Venus	W.	93 47 21	3463	95 8 27	3454	96 29 42	3446	97 51 7	3437
	Regulus	W.	69 38 41	3013	71 8 38	3005	72 38 45	2997	74 9 2	2989
	Jupiter	W.	43 57 16	3041	45 26 38	3034	46 56 9	3026	48 25 49	3018
	Antares	E.	30 33 8	3007	29 3 4	3000	27 32 51	2993	26 2 30	2986
	α Aquilæ	E.	83 26 23	3851	82 12 13	3849	80 58 1	3849	79 43 49	3849
	Saturn	E.	95 49 47	2993	94 19 26	2986	92 48 56	2979	91 18 17	2971
25	Sun	W.	135 36 1	3313	136 59 58	3303	138 24 6	3295	139 48 23	3285
	Venus	W.	104 40 52	3387	106 3 23	3376	107 26 7	3365	108 49 4	3353
	Regulus	W.	81 43 10	2943	83 14 34	2933	84 46 11	2922	86 18 2	2912
	Jupiter	W.	55 56 53	2972	57 27 41	2962	58 58 42	2951	60 29 56	2942
	Spica	W.	27 41 24	2959	29 12 28	2946	30 43 48	2934	32 15 24	2922
	α Aquilæ	E.	73 33 9	3863	72 19 12	3869	71 5 21	3876	69 51 37	3886
	Saturn	E.	83 42 19	2926	82 10 33	2916	80 38 34	2905	79 6 22	2896
	Fomalhaut	E.	100 57 34	3122	99 29 51	3110	98 1 54	3099	96 33 43	3088
26	Venus	W.	115 47 8	3294	117 11 26	3282	118 35 59	3270	120 0 46	3257
	Regulus	W.	94 0 36	2858	95 33 49	2847	97 7 16	2835	98 40 58	2825
	Jupiter	W.	68 9 24	2887	69 42 0	2875	71 14 51	2864	72 47 56	2852
	Spica	W.	39 57 14	2861	41 30 23	2849	43 3 47	2837	44 37 27	2825
	α Aquilæ	E.	63 45 52	3957	62 33 30	3978	61 21 29	4002	60 9 51	4028
	Saturn	E.	71 22 5	2842	69 48 32	2831	68 14 44	2820	66 40 42	2809
	Fomalhaut	E.	89 9 22	3032	87 39 49	3021	86 10 2	3010	84 40 2	3000
	α Pegasi	E.	109 19 43	3243	107 54 25	3225	106 28 45	3207	105 2 44	3190
27	Regulus	W.	106 33 11	2766	108 8 24	2754	109 43 52	2743	111 19 35	2731
	Jupiter	W.	80 37 8	2793	82 11 45	2782	83 46 37	2769	85 21 45	2757
	Spica	W.	52 29 47	2763	54 5 3	2751	55 40 35	2738	57 16 24	2726
	α Aquilæ	E.	54 19 15	4216	53 11 4	4267	52 3 41	4323	50 57 10	4387
	Saturn	E.	58 46 53	2753	57 11 23	2741	55 35 38	2729	53 59 37	2718
	Fomalhaut	E.	77 6 50	2950	75 35 35	2942	74 4 9	2933	72 32 32	2924
	α Pegasi	E.	97 47 44	3111	96 19 48	3097	94 51 35	3084	93 23 6	3071
28	Jupiter	W.	93 21 20	2699	94 58 1	2687	96 34 58	2675	98 12 11	2663
	Spica	W.	65 19 29	2666	66 56 54	2655	68 34 35	2643	70 12 32	2632
	α Aquilæ	E.	45 41 8	4834	44 42 0	4957	43 44 31	5095	42 48 50	5249
	Saturn	E.	45 55 53	2664	44 18 25	2655	42 40 44	2644	41 2 49	2635
	Fomalhaut	E.	64 52 1	2891	63 19 31	2886	61 46 54	2882	60 14 12	2880
	α Pegasi	E.	85 56 50	3013	84 26 53	3003	82 56 44	2995	81 26 25	2986
29	Jupiter	W.	106 22 3	2610	108 0 45	2599	109 39 42	2588	111 18 53	2577
	Spica	W.	78 26 8	2575	80 5 37	2565	81 45 20	2555	83 25 17	2544
	Antares	W.	32 31 41	2576	34 11 9	2564	35 50 53	2553	37 30 52	2543
	Saturn	E.	32 50 9	2593	31 11 4	2587	29 31 51	2582	27 52 31	2577
	Fomalhaut	E.	52 30 11	2880	50 57 27	2885	49 24 49	2891	47 52 19	2899
	α Pegasi	E.	73 52 29	2956	72 21 21	2953	70 50 9	2950	69 18 54	2949
30	Spica	W.	91 48 33	2496	93 29 52	2487	95 11 23	2478	96 53 7	2470
	Antares	W.	45 54 19	2494	47 35 41	2485	49 17 16	2475	50 59 4	2466
	Fomalhaut	E.	40 13 35	2985	38 43 3	3014	37 13 8	3048	35 43 55	3089
	α Pegasi	E.	61 42 43	2962	60 11 42	2969	58 40 50	2977	57 10 9	2989
	α Arietis	E.	102 28 21	2556	100 48 25	2545	99 8 15	2536	97 27 52	2527

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Merid-ian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	6 40 58.03	10.337	N.23 7 23.5	−10.11	15 46.18	68.79	3 28.79	0.480
Thur.	2	6 45 6.01	10.326	23 3 8.5	11.12	15 46.17	68.75	3 40.19	0.469
Frid.	3	6 49 13.72	10.316	22 58 29.5	12.12	15 46.17	68.71	3 51.31	0.459
Sat.	4	6 53 21.16	10.304	22 53 26.4	13.12	15 46.17	68.67	4 2.16	0.446
Sun.	5	6 57 28.30	10.291	22 47 59.4	14.12	15 46.17	68.62	4 12.71	0.434
Mon.	6	7 1 35.13	10.277	22 42 8.6	15.11	15 46.18	68.57	4 22.95	0.420
Tues.	7	7 5 41.62	10.263	22 35 54.2	16.09	15 46.19	68.52	4 32.85	0.406
Wed.	8	7 9 47.75	10.248	22 29 16.3	17.06	15 46.21	68.47	4 42.40	0.390
Thur.	9	7 13 53.51	10.232	22 22 15.0	18.03	15 46.23	68.41	4 51.58	0.374
Frid.	10	7 17 58.89	10.215	22 14 50.5	18.99	15 46.26	68.35	5 0.37	0.358
Sat.	11	7 22 3.84	10.197	22 7 2.8	19.96	15 46.29	68.29	5 8.75	0.340
Sun.	12	7 26 8.37	10.179	21 58 52.2	20.91	15 46.33	68.23	5 16.70	0.322
Mon.	13	7 30 12.44	10.160	21 50 19.1	21.85	15 46.38	68.16	5 24.19	0.303
Tues.	14	7 34 16.03	10.140	21 41 23.5	22.78	15 46.43	68.09	5 31.21	0.283
Wed.	15	7 38 19.14	10.119	21 32 5.7	23.71	15 46.48	68.02	5 37.75	0.262
Thur.	16	7 42 21.74	10.099	21 22 25.8	24.62	15 46.54	67.95	5 43.77	0.241
Frid.	17	7 46 23.83	10.077	21 12 24.0	25.52	15 46.61	67.88	5 49.27	0.218
Sat.	18	7 50 25.37	10.053	21 2 0.6	26.41	15 46.68	67.81	5 54.25	0.197
Sun.	19	7 54 26.36	10.029	20 51 16.0	27.29	15 46.75	67.73	5 58.67	0.173
Mon.	20	7 58 26.78	10.005	20 40 10.3	28.17	15 46.83	67.65	6 2.52	0.149
Tues.	21	8 2 26.62	9.981	20 28 43.7	29.03	15 46.92	67.57	6 5.79	0.125
Wed.	22	8 6 25.89	9.957	20 16 56.5	29.88	15 47.01	67.49	6 8.49	0.101
Thur.	23	8 10 24.57	9.932	20 4 49.1	30.72	15 47.11	67.41	6 10.60	0.076
Frid.	24	8 14 22.64	9.907	19 52 21.5	31.55	15 47.21	67.33	6 12.12	0.051
Sat.	25	8 18 20.10	9.882	19 39 34.2	32.38	15 47.31	67.25	6 13.04	0.026
Sun.	26	8 22 16.98	9.857	19 26 27.3	33.18	15 47.41	67.17	6 13.34	+0.001
Mon.	27	8 26 13.24	9.832	19 13 1.1	33.98	15 47.52	67.08	6 13.04	−0.024
Tues.	28	8 30 8.90	9.807	18 59 15.9	34.76	15 47.63	67.00	6 12.15	0.049
Wed.	29	8 34 3.97	9.782	18 45 12.0	35.55	15 47.74	66.91	6 10.67	0.074
Thur.	30	8 37 58.44	9.757	18 30 49.7	36.31	15 47.86	66.82	6 8.59	0 099
Frid.	31	8 41 52.31	9.732	18 16 9.1	37.06	15 47.98	66.73	6 5.90	0.124
Sat.	32	8 45 45.57	9.707	N.18 1 10.6	−37.80	15 48.10	66.65	6 2.61	0.150

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

— prefixed to the hourly change of declination, indicates that north declinations are decreasing, and south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	6 40 57.43	10.336	N.23 7 24.0	−10.11	3 28.76	0.480	6 37 28.67
Thur.	2	6 45 5.38	10.325	23 3 9.2	11.12	3 40.16	0.469	6 41 25.22
Frid.	3	6 49 13.06	10.315	22 58 30.3	12.12	3 51.28	0.459	6 45 21.78
Sat.	4	6 53 20.47	10.303	22 53 27.3	13.12	4 2.13	0.446	6 49 18.34
Sun.	5	6 57 27.58	10.290	22 48 0.4	14.12	4 12.68	0.434	6 53 14.90
Mon.	6	7 1 34.38	10.276	22 42 9.7	15.11	4 22.92	0.420	6 57 11.46
Tues.	7	7 5 40.84	10.262	22 35 55.4	16.09	4 32.82	0.406	7 1 8.02
Wed.	8	7 9 46.95	10.246	22 29 17.6	17.06	4 42.37	0.390	7 5 4.58
Thur.	9	7 13 52.69	10.231	22 22 16.4	18.03	4 51.55	0.374	7 9 1.14
Frid.	10	7 17 58.04	10.214	22 14 52.0	18.99	5 0.35	0.358	7 12 57.69
Sat.	11	7 22 2.97	10.196	22 7 4.5	19.96	5 8.72	0.340	7 16 54.25
Sun.	12	7 26 7.48	10.178	21 58 54.1	20.91	5 16.67	0.322	7 20 50.81
Mon.	13	7 30 11.53	10.159	21 50 21.1	21.85	5 24.16	0.303	7 24 47.37
Tues.	14	7 34 15.10	10.139	21 41 25.6	22.78	5 31.18	0.283	7 28 43.92
Wed.	15	7 38 18.19	10.118	21 32 7.9	23.71	5 37.71	0.262	7 32 40.48
Thur.	16	7 42 20.78	10.098	21 22 28.1	24.62	5 43.74	0.241	7 36 37.04
Frid.	17	7 46 22.85	10.076	21 12 26.4	25.52	5 49.25	0.218	7 40 33.60
Sat.	18	7 50 24.38	10.053	21 2 3.2	26.41	5 54.22	0.197	7 44 30.16
Sun.	19	7 54 25.36	10.029	20 51 18.7	27.29	5 58.64	0.173	7 48 26.72
Mon.	20	7 58 25.77	10.005	20 40 13.1	28.17	6 2.50	0.149	7 52 23.27
Tues.	21	8 2 25.61	9.981	20 28 46.6	29.03	6 5.78	0.125	7 56 19.83
Wed.	22	8 6 24.87	9.957	20 16 59.6	29.88	6 8.48	0.101	8 0 16.39
Thur.	23	8 10 23.54	9.932	20 4 52.3	30.72	6 10.59	0.076	8 4 12.95
Frid.	24	8 14 21.61	9.907	19 52 24.7	31.55	6 12.11	0.051	8 8 9.50
Sat.	25	8 18 19.08	9.882	19 39 37.5	32.38	6 13.02	0.026	8 12 6.06
Sun.	26	8 22 15.96	9.857	19 26 30.7	33.18	6 13.34	+0.001	8 16 2.62
Mon.	27	8 26 12.22	9.832	19 13 4.6	33.98	6 13.04	−0.024	8 19 59.18
Tues.	28	8 30 7.89	9.807	18 59 19.5	34.78	6 12.16	0.049	8 23 55.73
Wed.	29	8 34 2.96	9.782	18 45 15.7	35.55	6 10.67	0.074	8 27 52.29
Thur.	30	8 37 57.44	9.757	18 30 53.4	36.31	6 8.60	0.099	8 31 48.84
Frid.	31	8 41 51.31	9.732	18 16 12.8	37.06	6 5.91	0.124	8 35 45.40
Sat.	32	8 45 44.58	9.707	N.18 1 14.3	−37.80	6 2.62	0.151	8 39 41.96

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. +9^{s}.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	182	99 24 51.7	24 35.3	142.95	−0.64	0.0072026	+ 1.6	17 19 40.55
2	183	100 22 2.6	21 46.0	142.95	0.61	.0072057	1.0	17 15 44.63
3	184	101 19 13.6	18 56.8	142.96	0.57	.0072074	+ 0.4	17 11 48.72
4	185	102 16 24.7	16 7.8	142.97	0.50	.0072073	− 0.3	17 7 52.81
5	186	103 13 36.2	13 19.1	142.99	0.41	.0072055	1.1	17 3 56.89
6	187	104 10 48.1	10 30.8	143.00	0.29	.0072019	1.9	17 0 0.97
7	188	105 8 0.5	7 43.0	143.02	0.15	.0071963	2.8	16 56 5.05
8	189	106 5 13.3	4 55.6	143.04	−0.01	.0071885	3.7	16 52 9.15
9	190	107 2 26.5	2 8.6	143.06	+0.13	.0071784	4.7	16 48 13.24
10	191	107 59 40.0	59 21.9	143.07	0.26	.0071659	5.7	16 44 17.32
11	192	108 56 53.9	56 35.6	143.09	0.37	.0071509	6.8	16 40 21.41
12	193	109 54 8.3	53 49.8	143.10	0.44	.0071333	7.8	16 36 25.50
13	194	110 51 23.2	51 4.5	143.12	0.50	.0071132	8.9	16 32 29.59
14	195	111 48 38.4	48 19.6	143.13	0.52	.0070905	10.0	16 28 33.67
15	196	112 45 53.9	45 34.9	143.15	0.52	.0070651	11.1	16 24 37.76
16	197	113 43 9.8	42 50.6	143.16	0.47	.0070371	12.2	16 20 41.85
17	198	114 30 26.0	40 6.6	143.18	0.41	.0070066	13.2	16 16 45.94
18	199	115 37 42.5	37 22.9	143.19	0.32	.0069736	14.2	16 12 50.02
19	200	116 34 59.4	34 39.7	143.21	0.22	.0069383	15.2	16 8 54.11
20	201	117 32 16.6	31 56.7	143.22	+0.09	.0069008	16.1	16 4 58.20
21	202	118 29 34.0	29 13.9	143.23	−0.04	.0068612	17.0	16 1 2.29
22	203	119 26 51.6	26 31.3	143.24	0.17	.0068196	17.8	15 57 6.37
23	204	120 24 9.6	23 49.1	143.26	0.30	.0067762	18.5	15 53 10.46
24	205	121 21 28.1	21 7.5	143.28	0.41	.0067312	19.1	15 49 14.55
25	206	122 18 47.0	18 26.2	143.30	0.51	.0066846	19.7	15 45 18.65
26	207	123 16 6.4	15 45.4	143.32	0.57	.0066364	20.3	15 41 22.72
27	208	124 13 26.5	13 5.3	143.35	0.62	.0065869	20.9	15 37 26.81
28	209	125 10 47.3	10 26.0	143.38	0.64	.0065361	21.4	15 33 30.90
29	210	126 8 8.9	7 47.5	143.42	0.61	.0064841	21.9	15 29 34.99
30	211	127 5 31.3	5 9.7	143.46	0.56	.0064308	22.5	15 25 39.09
31	212	128 2 54.7	2 32.9	143.50	0.48	.0063762	23.0	15 21 43.18
32	213	128 60 19.1	59 57.1	143.54	−0.38	0.0063202	−23.6	15 17 47.27

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour. −9s.8296

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 48.9	15 52.7	57 55.8	+1.20	58 9.7	+1.11	14 11.8	2.31	17.2
2	15 56.1	15 59.2	58 22.4	1.00	58 33.8	0.89	15 5.7	2.18	18.2
3	16 2.0	16 4.4	58 43.9	0.79	58 52.6	0.68	15 56.7	2.07	19.2
4	16 6.4	16 8.1	59 0.1	0.57	59 6.3	0.46	16 45.6	2.00	20.2
5	16 9.4	16 10.4	59 11.1	0.35	59 14.8	0.25	17 33.3	1.99	21.2
6	16 11.0	16 11.3	59 17.2	+0.15	59 18.4	+0.05	18 21.4	2.03	22.2
7	16 11.3	16 11.0	59 18.4	−0.06	59 17.0	−0.17	19 11.2	2.13	23.2
8	16 10.2	16 9.1	59 14.3	0.28	59 10.2	0.40	20 3.8	2.26	24.2
9	16 7.6	16 5.7	59 4.7	0.52	58 57.6	0.65	20 59.7	2.40	25.2
10	16 3.4	16 0.6	58 49.0	0.79	58 38.7	0.92	21 58.7	2.50	26.2
11	15 57.4	15 53.7	58 26.9	1.05	58 13.6	1.16	22 59.1	2.51	27.2
12	15 49.7	15 45.4	57 59.0	1.27	57 43.1	1.37	23 58.4	2.42	28.2
13	15 40.8	15 36.0	57 26.1	1.45	57 8.4	1.50	☌		29.2
14	15 31.0	15 25.9	56 50.1	1.54	56 31.6	1.55	0 54.6	2.25	0.8
15	15 20.9	15 16.0	56 13.1	1.53	55 55.0	1.48	1 46.3	2.06	1.8
16	15 11.3	15 6.8	55 37.6	1.41	55 21.2	1.32	2 33.7	1.89	2.8
17	15 2.7	14 59.0	55 6.1	1.20	54 52.5	1.06	3 17.3	1.75	3.8
18	14 55.8	14 53.1	54 40.8	0.90	54 31.1	0.72	3 58.3	1.67	4.8
19	14 51.1	14 49.7	54 23.6	0.53	54 18.5	−0.33	4 37.8	1.63	5.8
20	14 49.0	14 49.0	54 15.8	−0.12	54 15.6	+0.09	5 17.1	1.65	6.8
21	14 49.6	14 50.9	54 18.0	+0.31	54 23.0	0.52	5 57.2	1.71	7.8
22	14 53.0	14 55.7	54 30.5	0.73	54 40.5	0.93	6 39.4	1.82	8.8
23	14 59.1	15 3.0	54 52.9	1.12	55 7.5	1.30	7 24.7	1.96	9.8
24	15 7.5	15 12.5	55 24.0	1.46	55 42.4	1.59	8 13.9	2.14	10.8
25	15 17.9	15 23.6	56 2.1	1.70	56 23.1	1.78	9 7.2	2.30	11.8
26	15 29 5	15 35.5	56 44.8	1.83	57 6.9	1.84	10 3.9	2.41	12.8
27	15 41.5	15 47.4	57 28.9	1.82	57 50.4	1.76	11 2.5	2.45	13.8
28	15 53.0	15 58.2	58 11.0	1.66	58 30.2	1.54	12 0.8	2.39	14.8
29	16 3.0	16 7.2	58 47.8	1.38	59 3.3	1.20	12 57.0	2.29	15.8
30	16 10.8	16 13.8	59 16.5	1.00	59 27.2	0.79	13 50.4	2.17	16.8
31	16 16.0	16 17.5	59 35.3	0.57	59 40.8	+0.35	14 41.2	2.07	17.8
32	16 18.3	16 18.4	59 43.8	+0.14	59 44.3	−0.06	15 30.3	2.03	18.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 17 17.51	2.4407	S. 24 53 27.5	7.549	0	22 9 36.32	2.2320	S. 16 14 30.5	13.579
1	20 19 43.86	2.4373	24 45 50.1	7.702	1	22 11 50.11	2.2277	16 0 53.0	13.671
2	20 22 9.99	2.4338	24 38 3.4	7.855	2	22 14 3.65	2.2235	15 47 10.0	13.761
3	20 24 35.91	2.4302	24 30 7.5	8.008	3	22 16 16.94	2.2193	15 33 21.7	13.850
4	20 27 1.61	2.4265	24 22 2.5	8.158	4	22 18 29.97	2.2151	15 19 28.1	13.938
5	20 29 27.09	2.4228	24 13 48.6	8.306	5	22 20 42.75	2.2110	15 5 29.2	14.025
6	20 31 52.34	2.4189	24 5 25.8	8.454	6	22 22 55.29	2.2069	14 51 25.2	14.110
7	20 34 17.36	2.4150	23 56 54.1	8.602	7	22 25 7.58	2.2028	14 37 16.2	14.193
8	20 36 42.14	2.4111	23 48 13.5	8.750	8	22 27 19.63	2.1989	14 23 2.2	14.274
9	20 39 6.69	2.4071	23 39 24.1	8.896	9	22 29 31.45	2.1950	14 8 43.3	14.355
10	20 41 30.99	2.4030	23 30 26.0	9.040	10	22 31 43.03	2.1911	13 54 19.6	14.434
11	20 43 55.05	2.3989	23 21 19.3	9.183	11	22 33 54.38	2.1872	13 39 51.2	14.511
12	20 46 18.86	2.3948	23 12 4.1	9.325	12	22 36 5.50	2.1834	13 25 18.3	14.586
13	20 48 42.42	2.3905	23 2 40.3	9.466	13	22 38 16.39	2.1797	13 10 40.9	14.661
14	20 51 5.72	2.3862	22 53 8.1	9.606	14	22 40 27.07	2.1761	12 55 59.0	14.735
15	20 53 28.76	2.3819	22 43 27.6	9.744	15	22 42 37.53	2.1725	12 41 12.7	14.808
16	20 55 51.54	2.3775	22 33 38.8	9.882	16	22 44 47.78	2.1689	12 26 22.1	14.878
17	20 58 14.06	2.3731	22 23 41.8	10.018	17	22 46 57.81	2.1654	12 11 27.4	14.945
18	21 0 36.32	2.3687	22 13 36.7	10.153	18	22 49 7.63	2.1620	11 56 28.8	15.012
19	21 2 58.30	2.3643	22 3 23.5	10.287	19	22 51 17.25	2.1587	11 41 26.1	15.078
20	21 5 20.02	2.3599	21 53 2.3	10.419	20	22 53 26.68	2.1554	11 26 19.5	15.143
21	21 7 41.48	2.3553	21 42 33.2	10.550	21	22 55 35.91	2.1521	11 11 9.0	15.206
22	21 10 2.66	2.3507	21 31 56.3	10.680	22	22 57 44.94	2.1490	10 55 54.8	15.266
23	21 12 23.56	2.3461	S. 21 21 11.6	10.809	23	22 59 53.79	2.1459	S. 10 40 37.1	15.325
THURSDAY 2.					SATURDAY 4.				
0	21 14 44.19	2.3415	S. 21 10 19.2	10.937	0	23 2 2.46	2.1429	S. 10 25 15.8	15.384
1	21 17 4.54	2.3370	20 59 19.2	11.063	1	23 4 10.94	2.1400	10 9 51.0	15.442
2	21 19 24.62	2.3324	20 48 11.7	11.188	2	23 6 19.26	2.1371	9 54 22.8	15.497
3	21 21 44.42	2.3277	20 36 56.7	11.312	3	23 8 27.41	2.1343	9 38 51.4	15.550
4	21 24 3.94	2.3231	20 25 34.3	11.433	4	23 10 35.38	2.1315	9 23 16.8	15.603
5	21 26 23.18	2.3185	20 14 4.7	11.553	5	23 12 43.20	2.1289	9 7 39.1	15.654
6	21 28 42.15	2.3138	20 2 28.0	11.672	6	23 14 50.86	2.1264	8 51 58.3	15.704
7	21 31 0.83	2.3091	19 50 44.1	11.790	7	23 16 58.37	2.1239	8 36 14.6	15.752
8	21 33 19.24	2.3045	19 38 53.2	11.907	8	23 19 5.73	2.1214	8 20 28.1	15.799
9	21 35 37.37	2.2999	19 26 55.3	12.023	9	23 21 12.94	2.1191	8 4 38.8	15.845
10	21 37 55.22	2.2952	19 14 50.5	12.137	10	23 23 20.02	2.1168	7 48 46.8	15.889
11	21 40 12.79	2.2906	19 2 38.9	12.248	11	23 25 26.97	2.1146	7 32 52.2	15.930
12	21 42 30.08	2.2860	18 50 20.7	12.358	12	23 27 33.78	2.1124	7 16 55.2	15.971
13	21 44 47.10	2.2814	18 37 55.9	12.468	13	23 29 40.46	2.1104	7 0 55.7	16.011
14	21 47 3.84	2.2767	18 25 24.5	12.578	14	23 31 47.03	2.1085	6 44 53.9	16.049
15	21 49 20.30	2.2721	18 12 46.6	12.685	15	23 33 53.49	2.1067	6 28 49.9	16.085
16	21 51 36.49	2.2675	18 0 2.4	12.790	16	23 35 59.84	2.1049	6 12 43.7	16.120
17	21 53 52.41	2.2630	17 47 11.9	12.893	17	23 38 6.08	2.1031	5 56 35.5	16.154
18	21 56 8.05	2.2585	17 34 15.3	12.994	18	23 40 12.22	2.1015	5 40 25.3	16.187
19	21 58 23.42	2.2540	17 21 12.6	13.096	19	23 42 18.27	2.1000	5 24 13.1	16.218
20	22 0 38.53	2.2495	17 8 3.8	13.196	20	23 44 24.23	2.0985	5 7 59.2	16.246
21	22 2 53.37	2.2451	16 54 49.1	13.294	21	23 46 30.09	2.0971	4 51 43.6	16.274
22	22 5 7.95	2.2407	16 41 28.6	13.390	22	23 48 35.88	2.0959	4 35 26.3	16.302
23	22 7 22.26	2.2363	16 28 2.4	13.485	23	23 50 41.60	2.0947	4 19 7.4	16.328
24	22 9 36.32	2.2320	S. 16 14 30.5	13.579	24	23 52 47.25	2.0936	S. 4 2 47.1	16.351

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 5.					TUESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 52 47.25	2.0936	S. 4 2 47.1	16.351	0	1 33 40.12	2.1436	N. 9 2 0.7	15.794
1	23 54 52.83	2.0925	3 46 25.4	16.373	1	1 35 48.83	2.1467	9 17 46.9	15.746
2	23 56 58.35	2.0915	3 30 2.4	16.393	2	1 37 57.73	2.1490	9 33 30.2	15.696
3	23 59 3.81	2.0906	3 13 38.2	16.413	3	1 40 6.82	2.1532	9 49 10.4	15.645
4	0 1 9.23	2.0899	2 57 12.9	16.431	4	1 42 16.11	2.1566	10 4 47.5	15.593
5	0 3 14.61	2.0893	2 40 46.6	16.447	5	1 44 25.62	2.1602	10 20 21.5	15.540
6	0 5 19.95	2.0887	2 24 19.3	16.463	6	1 46 35.35	2.1638	10 35 52.2	15.484
7	0 7 25.26	2.0882	2 7 51.1	16.476	7	1 48 45.28	2.1674	10 51 19.5	15.427
8	0 9 30.54	2.0877	1 51 22.2	16.488	8	1 50 55.43	2.1710	11 6 43.4	15.369
9	0 11 35.79	2.0874	1 34 52.6	16.498	9	1 53 5.80	2.1747	11 22 3.8	15.310
10	0 13 41.04	2.0872	1 18 22.4	16.508	10	1 55 16.40	2.1786	11 37 20.6	15.248
11	0 15 46.27	2.0871	1 1 51.6	16.516	11	1 57 27.23	2.1825	11 52 33.6	15.184
12	0 17 51.50	2.0870	0 45 20.4	16.523	12	1 59 38.30	2.1865	12 7 42.6	15.119
13	0 19 56.72	2.0871	0 28 48.9	16.527	13	2 1 49.61	2.1906	12 22 47.8	15.054
14	0 22 1.95	2.0872	S. 0 12 17.2	16.531	14	2 4 1.17	2.1947	12 37 49.0	14.987
15	0 24 7.18	2.0873	N. 0 4 14.8	16.533	15	2 6 12.97	2.1988	12 52 46.2	14.918
16	0 26 12.42	2.0876	0 20 46.8	16.534	16	2 8 25.03	2.2030	13 7 39.1	14.847
17	0 28 17.69	2.0880	0 37 18.9	16.534	17	2 10 37.34	2.2073	13 22 27.8	14.775
18	0 30 22.99	2.0885	0 53 50.9	16.532	18	2 12 49.91	2.2117	13 37 12.1	14.701
19	0 32 28.32	2.0890	1 10 22.7	16.528	19	2 15 2.74	2.2162	13 51 51.9	14.625
20	0 34 33.68	2.0896	1 26 54.2	16.523	20	2 17 15.85	2.2207	14 6 27.1	14.549
21	0 36 39.08	2.0904	1 43 25.4	16.517	21	2 19 29.23	2.2252	14 20 57.7	14.470
22	0 38 44.53	2.0912	1 59 56.2	16.509	22	2 21 42.88	2.2298	14 35 23.5	14.389
23	0 40 50.03	2.0922	N. 2 16 26.5	16.499	23	2 23 56.81	2.2345	N.14 49 44.4	14.308
	MONDAY 6.					WEDNESDAY 8.			
0	0 42 55.59	2.0932	N. 2 32 56.1	16.488	0	2 26 11.02	2.2393	N.15 4 0.4	14.225
1	0 45 1.21	2.0943	2 49 25.0	16.476	1	2 28 25.52	2.2441	15 18 11.4	14.140
2	0 47 6.90	2.0955	3 5 53.2	16.462	2	2 30 40.31	2.2489	15 32 17.2	14.053
3	0 49 12.67	2.0968	3 22 20.5	16.447	3	2 32 55.38	2.2537	15 46 17.7	13.964
4	0 51 18.52	2.0981	3 38 46.8	16.431	4	2 35 10.75	2.2586	16 0 12.9	13.875
5	0 53 24.45	2.0995	3 55 12.1	16.414	5	2 37 26.42	2.2636	16 14 2.7	13.785
6	0 55 30.47	2.1010	4 11 36.4	16.395	6	2 39 42.38	2.2686	16 27 47.1	13.693
7	0 57 36.58	2.1027	4 27 59.5	16.374	7	2 41 58.65	2.2736	16 41 25.9	13.598
8	0 59 42.80	2.1044	4 44 21.2	16.350	8	2 44 15.22	2.2787	16 54 58.9	13.500
9	1 1 49.12	2.1062	5 0 41.5	16.326	9	2 46 32.10	2.2839	17 8 25.9	13.402
10	1 3 55.55	2.1082	5 17 0.3	16.301	10	2 48 49.29	2.2891	17 21 47.0	13.304
11	1 6 2.10	2.1102	5 33 17.6	16.275	11	2 51 6.79	2.2943	17 35 2.3	13.205
12	1 8 8.77	2.1122	5 49 33.3	16.248	12	2 53 24.61	2.2995	17 48 11.6	13.103
13	1 10 15.57	2.1144	6 5 47.3	16.218	13	2 55 42.74	2.3048	18 1 14.7	12.998
14	1 12 22.50	2.1166	6 21 59.4	16.186	14	2 58 1.19	2.3101	18 14 11.4	12.891
15	1 14 29.56	2.1189	6 38 9.6	16.154	15	3 0 19.95	2.3154	18 27 1.6	12.783
16	1 16 36.77	2.1213	6 54 17.8	16.120	16	3 2 39.04	2.3208	18 39 45.3	12.675
17	1 18 44.12	2.1237	7 10 23.9	16.085	17	3 4 58.45	2.3261	18 52 22.6	12.567
18	1 20 51.62	2.1263	7 26 27.9	16.048	18	3 7 18.18	2.3315	19 4 53.4	12.456
19	1 22 59.28	2.1290	7 42 29.6	16.008	19	3 9 38.24	2.3370	19 17 17.4	12.342
20	1 25 7.10	2.1317	7 58 28.9	15.968	20	3 11 58.62	2.3424	19 29 34.4	12.226
21	1 27 15.09	2.1346	8 14 25.7	15.926	21	3 14 19.32	2.3478	19 41 44.4	12.109
22	1 29 23.26	2.1375	8 30 20.0	15.884	22	3 16 40.35	2.3532	19 53 47.4	11.991
23	1 31 31.60	2.1405	8 46 11.7	15.840	23	3 19 1.70	2.3586	20 5 43.3	11.872
24	1 33 40.12	2.1436	N. 9 2 0.7	15.794	24	3 21 23.38	2.3640	N.20 17 32.0	11.751

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 9.					SATURDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 21 23.38	2.3640	N.20 17 32.0	11.751	0	5 20 28.14	2.5695	N.26 55 26.3	4.378
1	3 23 45.39	2.3695	20 29 13.4	11.629	1	5 23 2.37	2.5714	26 59 43.6	4.199
2	3 26 7.72	2.3750	20 40 47.4	11.504	2	5 25 36.71	2.5731	27 3 50.2	4.022
3	3 28 30.38	2.3804	20 52 13.8	11.377	3	5 28 11.14	2.5747	27 7 46.2	3.843
4	3 30 53.36	2.3858	21 3 32.6	11.250	4	5 30 45.67	2.5762	27 11 31.4	3.664
5	3 33 16.67	2.3912	21 14 43.8	11.122	5	5 33 20.28	2.5775	27 15 5.9	3.485
6	3 35 40.30	2.3966	21 25 47.2	10.991	6	5 35 54.97	2.5787	27 18 29.7	3.306
7	3 38 4.25	2.4020	21 36 42.7	10.859	7	5 38 29.72	2.5797	27 21 42.6	3.126
8	3 40 28.53	2.4074	21 47 30.3	10.727	8	5 41 4.52	2.5805	27 24 44.8	2.947
9	3 42 53.13	2.4127	21 58 9.9	10.593	9	5 43 39.38	2.5812	27 27 36.2	2.767
10	3 45 18.05	2.4180	22 8 41.4	10.456	10	5 46 14.27	2.5817	27 30 16.8	2.587
11	3 47 43.29	2.4233	22 19 4.6	10.317	11	5 48 49.18	2.5821	27 32 46.6	2.406
12	3 50 8.84	2.4286	22 29 19.4	10.178	12	5 51 24.12	2.5824	27 35 5.5	2.224
13	3 52 34.71	2.4338	22 39 25.8	10.038	13	5 53 59.07	2.5825	27 37 13.5	2.043
14	3 55 0.89	2.4390	22 49 23.9	9.898	14	5 56 34.01	2.5824	27 39 10.6	1.862
15	3 57 27.38	2.4440	22 59 13.5	9.755	15	5 59 8.95	2.5822	27 40 56.9	1.681
16	3 59 54.17	2.4491	23 8 54.4	9.609	16	6 1 43.87	2.5817	27 42 32.3	1.499
17	4 2 21.27	2.4541	23 18 26.5	9.463	17	6 4 18.75	2.5811	27 43 56.8	1.318
18	4 4 48.67	2.4591	23 27 49.9	9.316	18	6 6 53.60	2.5804	27 45 10.5	1.138
19	4 7 16.37	2.4641	23 37 4.4	9.167	19	6 9 28.40	2.5795	27 46 13.4	0.957
20	4 9 44.36	2.4690	23 46 9.9	9.017	20	6 12 3.14	2.5785	27 47 5.4	0.777
21	4 12 12.65	2.4739	23 55 6.4	8.866	21	6 14 37.82	2.5774	27 47 46.6	0.597
22	4 14 41.23	2.4786	24 3 53.8	8.714	22	6 17 12.42	2.5760	27 48 17.0	0.417
23	4 17 10.08	2.4832	N.24 12 32.0	8.560	23	6 19 46.94	2.5745	N.27 48 36.6	0.237
	FRIDAY 10.					SUNDAY 12.			
0	4 19 39.21	2.4878	N.24 21 0.9	8.404	0	6 22 21.36	2.5729	N.27 48 45.5	+0.058
1	4 22 8.62	2.4924	24 29 20.4	8.248	1	6 24 55.68	2.5710	27 48 43.6	−0.122
2	4 24 38.30	2.4970	24 37 30.5	8.091	2	6 27 29.88	2.5690	27 48 30.9	0.301
3	4 27 8.25	2.5014	24 45 31.3	7.933	3	6 30 3.96	2.5669	27 48 7.5	0.479
4	4 29 38.46	2.5056	24 53 22.5	7.773	4	6 32 37.91	2.5647	27 47 33.5	0.657
5	4 32 8.92	2.5098	25 1 4.0	7.611	5	6 35 11.72	2.5622	27 46 48.8	0.834
6	4 34 39.63	2.5140	25 8 35.8	7.449	6	6 37 45.37	2.5596	27 45 53.5	1.010
7	4 37 10.59	2.5180	25 15 57.9	7.286	7	6 40 18.86	2.5568	27 44 47.6	1.186
8	4 39 41.78	2.5219	25 23 10.1	7.122	8	6 42 52.18	2.5539	27 43 31.2	1.361
9	4 42 13.21	2.5257	25 30 12.5	6.957	9	6 45 25.33	2.5509	27 42 4.3	1.536
10	4 44 44.87	2.5295	25 37 5.0	6.791	10	6 47 58.29	2.5477	27 40 26.9	1.711
11	4 47 16.75	2.5331	25 43 47.4	6.624	11	6 50 31.05	2.5443	27 38 39.1	1.885
12	4 49 48.84	2.5366	25 50 19.8	6.456	12	6 53 3.60	2.5408	27 36 40.8	2.057
13	4 52 21.14	2.5400	25 56 42.1	6.287	13	6 55 35.94	2.5372	27 34 32.2	2.228
14	4 54 53.64	2.5434	26 2 54.2	6.118	14	6 58 8.06	2.5334	27 32 13.4	2.399
15	4 57 26.34	2.5466	26 8 56.2	5.948	15	7 0 39.94	2.5294	27 29 44.3	2.570
16	4 59 59.23	2.5496	26 14 47.9	5.776	16	7 3 11.58	2.5254	27 27 5.0	2.739
17	5 2 32.29	2.5524	26 20 29.2	5.603	17	7 5 42.98	2.5213	27 24 15.6	2.908
18	5 5 5.52	2.5552	26 26 0.2	5.430	18	7 8 14.13	2.5171	27 21 16.0	3.077
19	5 7 38.92	2.5580	26 31 20.8	5.256	19	7 10 45.02	2.5127	27 18 6.4	3.244
20	5 10 12.48	2.5606	26 36 30.9	5.082	20	7 13 15.64	2.5081	27 14 46.9	3.409
21	5 12 46.19	2.5631	26 41 30.6	4.907	21	7 15 45.98	2.5034	27 11 17.4	3.574
22	5 15 20.04	2.5654	26 46 19.7	4.731	22	7 18 16.04	2.4986	27 7 38.1	3.737
23	5 17 54.03	2.5675	26 50 58.3	4.555	23	7 20 45.81	2.4937	27 3 49.0	3.899
24	5 20 28.14	2.5695	N.26 55 26.3	4.378	24	7 23 15.28	2.4887	N.26 59 50.2	4.061

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 13.					WEDNESDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 23 15.28	2.4887	N.26 59 50.2	4.061	0	9 15 27.16	2.1705	N.21 3 29.4	10.240
1	7 25 44.45	2.4836	26 55 41.7	4.222	1	9 17 37.18	2.1635	20 53 12.2	10.333
2	7 28 13.31	2.4784	26 51 23.6	4.381	2	9 19 46.78	2.1565	20 42 49.5	10.425
3	7 30 41.86	2.4732	26 46 56.0	4.539	3	9 21 55.96	2.1494	20 32 21.2	10.516
4	7 33 10.09	2.4678	26 42 18.9	4.696	4	9 24 4.71	2.1424	20 21 47.6	10.604
5	7 35 37.99	2.4621	26 37 32.5	4.851	5	9 26 13.05	2.1356	20 11 8.7	10.692
6	7 38 5.54	2.4564	26 32 36.8	5.006	6	9 28 20.98	2.1287	20 0 24.5	10.779
7	7 40 32.75	2.4507	26 27 31.8	5.160	7	9 30 28.50	2.1218	19 49 35.2	10.864
8	7 42 59.62	2.4450	26 22 17.6	5.313	8	9 32 35.60	2.1148	19 38 40.9	10.946
9	7 45 26.15	2.4391	26 16 54.3	5.464	9	9 34 42.28	2.1079	19 27 41.7	11.028
10	7 47 52.32	2.4330	26 11 22.0	5.613	10	9 36 48.56	2.1011	19 16 37.6	11.108
11	7 50 18.11	2.4268	26 5 40.8	5.760	11	9 38 54.43	2.0944	19 5 28.7	11.188
12	7 52 43.53	2.4206	25 59 50.8	5.907	12	9 40 59.89	2.0877	18 54 15.1	11.266
13	7 55 8.58	2.4144	25 53 52.0	6.053	13	9 43 4.96	2.0811	18 42 56.9	11.342
14	7 57 33.25	2.4080	25 47 44.5	6.197	14	9 45 9.63	2.0744	18 31 34.1	11.417
15	7 59 57.54	2.4016	25 41 28.4	6.339	15	9 47 13.89	2.0677	18 20 6.9	11.491
16	8 2 21.44	2.3951	25 35 3.8	6.480	16	9 49 17.76	2.0612	18 8 35.3	11.563
17	8 4 44.95	2.3886	25 28 30.8	6.621	17	9 51 21.24	2.0548	17 56 59.4	11.635
18	8 7 8.07	2.3820	25 21 49.3	6.760	18	9 53 24.34	2.0484	17 45 19.2	11.704
19	8 9 30.79	2.3753	25 14 59.6	6.897	19	9 55 27.06	2.0420	17 33 34.9	11.772
20	8 11 53.11	2.3686	25 8 1.7	7.033	20	9 57 29.39	2.0356	17 21 46.6	11.839
21	8 14 15.02	2.3619	25 0 55.7	7.168	21	9 59 31.34	2.0294	17 9 54.2	11.906
22	8 16 36.53	2.3550	24 53 41.6	7.301	22	10 1 32.92	2.0232	16 57 57.9	11.971
23	8 18 57.62	2.3481	N.24 46 19.6	7.432	23	10 3 34.13	2.0170	N.16 45 57.8	12.034
	TUESDAY 14.					THURSDAY 16.			
0	8 21 18.30	2.3412	N.24 38 49.8	7.562	0	10 5 34.97	2.0110	N.16 33 53.9	12.096
1	8 23 38.56	2.3343	24 31 12.2	7.690	1	10 7 35.45	2.0050	16 21 46.3	12.157
2	8 25 58.41	2.3273	24 23 27.0	7.818	2	10 9 35.57	1.9989	16 9 35.1	12.216
3	8 28 17.84	2.3203	24 15 34.1	7.944	3	10 11 35.32	1.9929	15 57 20.4	12.274
4	8 30 36.85	2.3133	24 7 33.7	8.068	4	10 13 34.72	1.9871	15 45 2.2	12.332
5	8 32 55.43	2.3062	23 59 26.0	8.190	5	10 15 33.78	1.9814	15 32 40.6	12.388
6	8 35 13.59	2.2991	23 51 10.9	8.312	6	10 17 32.49	1.9756	15 20 15.7	12.443
7	8 37 31.32	2.2920	23 42 48.5	8.432	7	10 19 30.86	1.9699	15 7 47.5	12.497
8	8 39 48.63	2.2850	23 34 19.1	8.550	8	10 21 28.89	1.9643	14 55 16.1	12.549
9	8 42 5.51	2.2778	23 25 42.6	8.667	9	10 23 26.58	1.9587	14 42 41.6	12.601
10	8 44 21.96	2.2706	23 16 59.1	8.782	10	10 25 23.94	1.9533	14 30 4.0	12.651
11	8 46 37.98	2.2634	23 8 8.8	8.896	11	10 27 20.98	1.9479	14 17 23.5	12.700
12	8 48 53.57	2.2562	22 59 11.6	9.008	12	10 29 17.69	1.9425	14 4 40.1	12.748
13	8 51 8.73	2.2491	22 50 7.8	9.118	13	10 31 14.08	1.9372	13 51 53.8	12.795
14	8 53 23.46	2.2420	22 40 57.4	9.228	14	10 33 10.16	1.9320	13 39 4.7	12.841
15	8 55 37.77	2.2348	22 31 40.4	9.337	15	10 35 5.93	1.9269	13 26 12.9	12.885
16	8 57 51.64	2.2276	22 22 17.0	9.443	16	10 37 1.39	1.9218	13 13 18.5	12.929
17	9 0 5.08	2.2204	22 12 47.3	9.547	17	10 38 56.55	1.9168	13 0 21.5	12.972
18	9 2 18.09	2.2132	22 3 11.4	9.650	18	10 40 51.41	1.9118	12 47 21.9	13.013
19	9 4 30.67	2.2061	21 53 29.3	9.753	19	10 42 45.97	1.9069	12 34 19.9	13.053
20	9 6 42.82	2.1990	21 43 41.1	9.853	20	10 44 40.25	1.9022	12 21 15.5	13.093
21	9 8 54.55	2.1919	21 33 46.9	9.952	21	10 46 34.24	1.8975	12 8 8.7	13.132
22	9 11 5.85	2.1848	21 23 46.8	10.049	22	10 48 27.95	1.8928	11 54 59.7	13.169
23	9 13 16.72	2.1776	21 13 41.0	10.145	23	10 50 21.38	1.8882	11 41 48.5	13.205
24	9 15 27.16	2.1705	N.21 3 29.4	10.240	24	10 52 14.54	1.8837	N.11 28 35.1	13.241

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 17.					SUNDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 52 14.54	1.8837	N.11 28 35.1	13.241	0	12 18 53.97	1.7565	N. 0 29 4.5	13.935
1	10 54 7.43	1.8793	11 15 19.6	13.275	1	12 20 39.34	1.7557	0 15 8.6	13.930
2	10 56 0.06	1.8749	11 2 2.1	13.309	2	12 22 24.66	1.7549	N. 0 1 12.9	13.926
3	10 57 52.42	1.8706	10 48 42.6	13.341	3	12 24 9.94	1.7543	S. 0 12 42.5	13.921
4	10 59 44.53	1.8664	10 35 21.2	13.373	4	12 25 55.19	1.7538	0 26 37.6	13.915
5	11 1 36.39	1.8623	10 21 57.9	13.403	5	12 27 40.41	1.7534	0 40 32.3	13.909
6	11 3 28.01	1.8582	10 8 32.8	13.433	6	12 29 25.60	1.7530	0 54 26.6	13.902
7	11 5 19.38	1.8542	9 55 6.0	13.461	7	12 31 10.77	1.7528	1 8 20.5	13.893
8	11 7 10.52	1.8503	9 41 37.5	13.489	8	12 32 55.93	1.7526	1 22 13.8	13.884
9	11 9 1.42	1.8464	9 28 7.3	13.516	9	12 34 41.09	1.7525	1 36 6.6	13.876
10	11 10 52.09	1.8426	9 14 35.6	13.542	10	12 36 26.24	1.7524	1 49 58.9	13.867
11	11 12 42.54	1.8390	9 1 2.3	13.568	11	12 38 11.38	1.7523	2 3 50.6	13.856
12	11 14 32.77	1.8354	8 47 27.5	13.592	12	12 39 56.52	1.7524	2 17 41.6	13.845
13	11 16 22.79	1.8319	8 33 51.3	13.614	13	12 41 41.67	1.7526	2 31 32.0	13.833
14	11 18 12.60	1.8284	8 20 13.8	13.637	14	12 43 26.83	1.7528	2 45 21.6	13.820
15	11 20 2.20	1.8250	8 6 34.9	13.659	15	12 45 12.01	1.7531	2 59 10.4	13.807
16	11 21 51.60	1.8217	7 52 54.7	13.680	16	12 46 57.21	1.7535	3 12 58.4	13.794
17	11 23 40.81	1.8184	7 39 13.3	13.099	17	12 48 42.44	1.7540	3 26 45.6	13.780
18	11 25 29.82	1.8152	7 25 30.8	13.718	18	12 50 27.70	1.7545	3 40 31.9	13.765
19	11 27 18.64	1.8122	7 11 47.1	13.737	19	12 52 12.99	1.7551	3 54 17.3	13.749
20	11 29 7.29	1.8093	6 58 2.4	13.754	20	12 53 58.32	1.7558	4 8 1.7	13.733
21	11 30 55.76	1.8064	6 44 16.7	13.771	21	12 55 43.69	1.7566	4 21 45.2	13.716
22	11 32 44.05	1.8035	6 30 29.9	13.787	22	12 57 29.11	1.7575	4 35 27.6	13.698
23	11 34 32.18	1.8007	N. 6 16 42.3	13.801	23	12 59 14.59	1.7585	S. 4 49 8.9	13.680
	SATURDAY 18.					MONDAY 20.			
0	11 36 20.14	1.7981	N. 6 2 53.8	13.815	0	13 1 0.13	1.7595	S. 5 2 49.2	13.662
1	11 38 7.95	1.7955	5 49 4.5	13.829	1	13 2 45.73	1.7606	5 16 28.3	13.642
2	11 39 55.60	1.7928	5 35 14.4	13.842	2	13 4 31.40	1.7617	5 30 6.2	13.622
3	11 41 43.08	1.7902	5 21 23.5	13.853	3	13 6 17.14	1.7629	5 43 42.9	13.602
4	11 43 30.42	1.7879	5 7 32.0	13.864	4	13 8 2.95	1.7642	5 57 18.4	13.580
5	11 45 17.63	1.7856	4 53 39.8	13.875	5	13 9 48.85	1.7656	6 10 52.5	13.558
6	11 47 4.70	1.7834	4 39 47.0	13.885	6	13 11 34.83	1.7670	6 24 25.3	13.535
7	11 48 51.64	1.7812	4 25 53.6	13.894	7	13 13 20.90	1.7686	6 37 56.7	13.512
8	11 50 38.45	1.7792	4 11 59.8	13.902	8	13 15 7.07	1.7703	6 51 26.7	13.488
9	11 52 25.14	1.7772	3 58 5.5	13.909	9	13 16 53.34	1.7720	7 4 55.2	13.463
10	11 54 11.71	1.7752	3 44 10.8	13.916	10	13 18 39.71	1.7738	7 18 22.2	13.438
11	11 55 58.17	1.7734	3 30 15.7	13.922	11	13 20 26.19	1.7756	7 31 47.7	13.412
12	11 57 44.52	1.7717	3 16 20.2	13.927	12	13 22 12.78	1.7775	7 45 11.6	13.385
13	11 59 30.77	1.7700	3 2 24.5	13.931	13	13 23 59.49	1.7795	7 58 33.9	13.358
14	12 1 16.92	1.7683	2 48 28.5	13.935	14	13 25 46.32	1.7815	8 11 54.5	13.330
15	12 3 2.97	1.7667	2 34 32.3	13.938	15	13 27 33.27	1.7836	8 25 13.4	13.301
16	12 4 48.93	1.7653	2 20 35.9	13.940	16	13 29 20.36	1.7858	8 38 30.6	13.271
17	12 6 34.81	1.7639	2 6 39.5	13.941	17	13 31 7.58	1.7881	8 51 45.9	13.240
18	12 8 20.61	1.7627	1 52 43.0	13.942	18	13 32 54.94	1.7905	9 4 59.4	13.210
19	12 10 6.34	1.7615	1 38 46.4	13.943	19	13 34 42.44	1.7929	9 18 11.1	13.179
20	12 11 51.99	1.7603	1 24 49.9	13.942	20	13 36 30.09	1.7955	9 31 20.9	13.147
21	12 13 37.57	1.7592	1 10 53.4	13.941	21	13 38 17.90	1.7981	9 44 28.7	13.114
22	12 15 23.09	1.7582	0 56 57.0	13.940	22	13 40 5.86	1.8007	9 57 34.5	13.080
23	12 17 8.56	1.7573	0 43 0.7	13.938	23	13 41 53.99	1.8034	10 10 38.2	13.045
24	12 18 53.97	1.7565	N. 0 29 4.5	13.935	24	13 43 42.28	1.8062	S.10 23 39.9	13.010

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 43 42.28	1.8062	S. 10 23 39.9	13.010
1	13 45 30.74	1.8092	10 36 39.4	12.975
2	13 47 19.38	1.8122	10 49 36.8	12.939
3	13 49 8.20	1.8152	11 2 32.0	12.901
4	13 50 57.20	1.8182	11 15 24.9	12.863
5	13 52 46.39	1.8214	11 28 15.5	12.824
6	13 54 35.77	1.8247	11 41 3.7	12.784
7	13 56 25.36	1.8280	11 53 49.6	12.744
8	13 58 15.14	1.8313	12 6 33.0	12.703
9	14 0 5.12	1.8348	12 19 13.9	12.662
10	14 1 55.32	1.8384	12 31 52.4	12.620
11	14 3 45.73	1.8420	12 44 28.2	12.576
12	14 5 36.36	1.8456	12 57 1.4	12.531
13	14 7 27.21	1.8494	13 9 31.9	12.486
14	14 9 18.29	1.8532	13 21 59.7	12.441
15	14 11 9.60	1.8571	13 34 24.8	12.394
16	14 13 1.14	1.8611	13 46 47.0	12.347
17	14 14 52.93	1.8651	13 59 6.4	12.299
18	14 16 44.96	1.8692	14 11 22.9	12.250
19	14 18 37.24	1.8734	14 23 36.4	12.199
20	14 20 29.77	1.8776	14 35 46.8	12.148
21	14 22 22.55	1.8818	14 47 54.2	12.097
22	14 24 15.59	1.8862	14 59 58.5	12.045
23	14 26 8.90	1.8907	S. 15 11 59.6	11.992

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 28 2.48	1.8952	S. 15 23 57.5	11.938
1	14 29 56.33	1.8998	15 35 52.1	11.883
2	14 31 50.46	1.9044	15 47 43.4	11.827
3	14 33 44.86	1.9091	15 59 31.3	11.770
4	14 35 39.55	1.9139	16 11 15.8	11.712
5	14 37 34.53	1.9187	16 22 56.8	11.653
6	14 39 29.79	1.9235	16 34 34.2	11.593
7	14 41 25.35	1.9285	16 46 8.0	11.533
8	14 43 21.21	1.9335	16 57 38.2	11.473
9	14 45 17.38	1.9385	17 9 4.7	11.411
10	14 47 13.85	1.9436	17 20 27.4	11.347
11	14 49 10.63	1.9488	17 31 46.3	11.283
12	14 51 7.72	1.9541	17 43 1.3	11.218
13	14 53 5.13	1.9594	17 54 12.4	11.151
14	14 55 2.86	1.9648	18 5 19.4	11.084
15	14 57 0.91	1.9702	18 16 22.4	11.016
16	14 58 59.29	1.9757	18 27 21.3	10.947
17	15 0 58.00	1.9812	18 38 16.0	10.877
18	15 2 57.04	1.9868	18 49 6.5	10.805
19	15 4 56.42	1.9924	18 59 52.6	10.733
20	15 6 56.14	1.9981	19 10 34.4	10.660
21	15 8 56.20	2.0039	19 21 11.8	10.586
22	15 10 56.61	2.0097	19 31 44.7	10.511
23	15 12 57.36	2.0155	19 42 13.0	10.435
24	15 14 58.46	2.0213	S. 19 52 36.8	10.358

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 14 58.46	2.0213	S. 19 52 36.8	10.358
1	15 16 59.92	2.0273	20 2 55.9	10.278
2	15 19 1.74	2.0333	20 13 10.2	10.198
3	15 21 3.92	2.0393	20 23 19.7	10.118
4	15 23 6.46	2.0453	20 33 24.3	10.036
5	15 25 9.36	2.0514	20 43 23.9	9.953
6	15 27 12.63	2.0575	20 53 18.6	9.870
7	15 29 16.27	2.0636	21 3 8.2	9.784
8	15 31 20.28	2.0698	21 12 52.6	9.697
9	15 33 24.66	2.0761	21 22 31.8	9.609
10	15 35 29.42	2.0825	21 32 5.7	9.521
11	15 37 34.56	2.0888	21 41 34.3	9.432
12	15 39 40.07	2.0951	21 50 57.5	9.341
13	15 41 45.97	2.1015	22 0 15.2	9.249
14	15 43 52.25	2.1078	22 9 27.3	9.155
15	15 45 58.91	2.1142	22 18 33.8	9.061
16	15 48 5.96	2.1207	22 27 34.6	8.965
17	15 50 13.40	2.1271	22 36 29.6	8.869
18	15 52 21.22	2.1336	22 45 18.8	8.771
19	15 54 29.44	2.1402	22 54 2.1	8.671
20	15 56 38.05	2.1467	23 2 39.4	8.571
21	15 58 47.05	2.1532	23 11 10.6	8.469
22	16 0 56.44	2.1597	23 19 35.7	8.366
23	16 3 6.22	2.1662	S. 23 27 54.5	8.262

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 5 16.39	2.1728	S. 23 36 7.1	8.158
1	16 7 26.96	2.1795	23 44 13.4	8.051
2	16 9 37.93	2.1862	23 52 13.2	7.943
3	16 11 49.30	2.1928	24 0 6.5	7.833
4	16 14 1.06	2.1993	24 7 53.2	7.723
5	16 16 13.22	2.2059	24 15 33.3	7.613
6	16 18 25.77	2.2125	24 23 6.7	7.500
7	16 20 38.72	2.2191	24 30 33.2	7.385
8	16 22 52.06	2.2256	24 37 52.9	7.270
9	16 25 5.79	2.2321	24 45 5.7	7.155
10	16 27 19.92	2.2387	24 52 11.5	7.037
11	16 29 34.44	2.2453	24 59 10.1	6.918
12	16 31 49.35	2.2518	25 6 1.6	6.798
13	16 34 4.65	2.2583	25 12 45.9	6.677
14	16 36 20.34	2.2647	25 19 22.8	6.554
15	16 38 36.41	2.2711	25 25 52.3	6.430
16	16 40 52.87	2.2775	25 32 14.3	6.305
17	16 43 9.71	2.2839	25 38 28.8	6.179
18	16 45 26.93	2.2902	25 44 35.7	6.051
19	16 47 44.53	2.2965	25 50 34.9	5.922
20	16 50 2.51	2.3028	25 56 26.3	5.792
21	16 52 20.86	2.3090	26 2 9.9	5.661
22	16 54 39.59	2.3152	26 7 45.6	5.529
23	16 56 58.69	2.3213	26 13 13.3	5.395
24	16 59 18.15	2.3274	S. 26 18 33.0	5.200

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.					MONDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 59 18.15	2.3274	S.26 18 33.0	5.260	0	18 56 29.91	2.5142	S.27 35 59.6	2.341
1	17 1 37.98	2.3335	26 23 44.5	5.124	1	18 59 0.80	2.5151	27 33 33.9	2.514
2	17 3 58.17	2.3395	26 28 47.8	4.987	2	19 1 31.73	2.5159	27 30 57.9	2.687
3	17 6 18.72	2.3455	26 33 42.9	4.848	3	19 4 2.71	2.5166	27 28 11.5	2.860
4	17 8 39.62	2.3513	26 38 29.6	4.708	4	19 6 33.72	2.5171	27 25 14.6	3.034
5	17 11 0.87	2.3571	26 43 7.9	4.568	5	19 9 4.76	2.5175	27 22 7.4	3.207
6	17 13 22.47	2.3629	26 47 37.8	4.427	6	19 11 35.82	2.5178	27 18 49.8	3.380
7	17 15 44.41	2.3685	26 51 59.1	4.284	7	19 14 6.90	2.5179	27 15 21.8	3.554
8	17 18 6.69	2.3741	26 56 11.8	4.140	8	19 16 37.97	2.5179	27 11 43.4	3.727
9	17 20 29.30	2.3796	27 0 15.8	3.994	9	19 19 9.04	2.5177	27 7 54.6	3.899
10	17 22 52.24	2.3851	27 4 11.0	3.847	10	19 21 40.10	2.5174	27 3 55.5	4.072
11	17 25 15.51	2.3905	27 7 57.4	3.700	11	19 24 11.13	2.5170	26 59 46.0	4.245
12	17 27 39.10	2.3957	27 11 35.0	3.552	12	19 26 42.13	2.5164	26 55 26.1	4.418
13	17 30 3.00	2.4009	27 15 3.6	3.402	13	19 29 13.09	2.5156	26 50 55.9	4.590
14	17 32 27.21	2.4061	27 18 23.2	3.252	14	19 31 44.00	2.5148	26 46 15.4	4.762
15	17 34 51.73	2.4111	27 21 33.8	3.100	15	19 34 14.86	2.5138	26 41 24.5	4.933
16	17 37 16.54	2.4160	27 24 35.2	2.947	16	19 36 45.65	2.5127	26 36 23.4	5.104
17	17 39 41.65	2.4209	27 27 27.4	2.794	17	19 39 16.38	2.5116	26 31 12.0	5.276
18	17 42 7.05	2.4257	27 30 10.4	2.640	18	19 41 47.04	2.5103	26 25 50.3	5.447
19	17 44 32.73	2.4303	27 32 44.1	2.484	19	19 44 17.62	2.5088	26 20 18.4	5.617
20	17 46 58.68	2.4348	27 35 8.4	2.327	20	19 46 48.10	2.5072	26 14 36.3	5.786
21	17 49 24.91	2.4393	27 37 23.3	2.169	21	19 49 18.48	2.5055	26 8 44.1	5.955
22	17 51 51.40	2.4437	27 39 28.7	2.011	22	19 51 48.76	2.5037	26 2 41.7	6.124
23	17 54 18.15	2.4480	S.27 41 24.6	1.852	23	19 54 18.93	2.5018	S.25 56 29.3	6.292
	SUNDAY 26.					TUESDAY 28.			
0	17 56 45.16	2.4522	S.27 43 10.9	1.692	0	19 56 48.97	2.4997	S.25 50 6.8	6.459
1	17 59 12.41	2.4562	27 44 47.6	1.531	1	19 59 18.89	2.4976	25 43 34.2	6.626
2	18 1 39.89	2.4601	27 46 14.6	1.369	2	20 1 48.68	2.4953	25 36 51.7	6.792
3	18 4 7.61	2.4639	27 47 31.9	1.207	3	20 4 18.32	2.4928	25 29 59.2	6.958
4	18 6 35.55	2.4675	27 48 39.4	1.044	4	20 6 47.81	2.4903	25 22 56.7	7.122
5	18 9 3.71	2.4711	27 49 37.1	0.880	5	20 9 17.15	2.4878	25 15 44.5	7.285
6	18 11 32.08	2.4745	27 50 24.9	0.715	6	20 11 46.34	2.4852	25 8 22.5	7.449
7	18 14 0.65	2.4778	27 51 2.8	0.550	7	20 14 15.37	2.4824	25 0 50.6	7.612
8	18 16 29.41	2.4810	27 51 30.8	0.384	8	20 16 44.23	2.4795	24 53 9.1	7.773
9	18 18 58.36	2.4841	27 51 48.8	0.217	9	20 19 12.91	2.4764	24 45 17.9	7.934
10	18 21 27.50	2.4871	27 51 56.8	−0.049	10	20 21 41.40	2.4733	24 37 17.0	8.094
11	18 23 56.81	2.4899	27 51 54.7	+0.118	11	20 24 9.70	2.4701	24 29 6.6	8.253
12	18 26 26.28	2.4925	27 51 42.6	0.287	12	20 26 37.81	2.4669	24 20 46.7	8.411
13	18 28 55.91	2.4951	27 51 20.3	0.456	13	20 29 5.73	2.4637	24 12 17.3	8.568
14	18 31 25.69	2.4975	27 50 47.9	0.625	14	20 31 33.45	2.4603	24 3 38.6	8.724
15	18 33 55.61	2.4998	27 50 5.3	0.795	15	20 34 0.96	2.4567	23 54 50.5	8.880
16	18 36 25.66	2.5019	27 49 12.5	0.966	16	20 36 28.25	2.4531	23 45 53.1	9.033
17	18 38 55.84	2.5039	27 48 9.4	1.136	17	20 38 55.33	2.4495	23 36 46.6	9.185
18	18 41 26.13	2.5058	27 46 56.1	1.307	18	20 41 22.19	2.4456	23 27 30.9	9.338
19	18 43 56.53	2.5076	27 45 32.5	1.479	19	20 43 48.82	2.4420	23 18 6.1	9.488
20	18 46 27.04	2.5093	27 43 58.6	1.651	20	20 46 15.23	2.4382	23 8 32.4	9.637
21	18 48 57.65	2.5108	27 42 14.4	1.823	21	20 48 41.41	2.4343	22 58 49.7	9.786
22	18 51 28.33	2.5120	27 40 19.8	1.995	22	20 51 7.35	2.4303	22 48 58.1	9.933
23	18 53 59.09	2.5132	27 38 14.9	2.168	23	20 53 33.04	2.4262	22 38 57.8	10.079
24	18 56 29.91	2.5142	S.27 35 59.6	2.341	24	20 55 58.49	2.4221	S.22 28 48.7	10.224

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 55 58.49	2.4221	S. 22 28 48.7	10.224
1	20 58 23.69	2.4180	22 18 31.0	10.367
2	21 0 48.65	2.4140	22 8 4.8	10.509
3	21 3 13.37	2.4098	21 57 30.0	10.650
4	21 5 37.83	2.4055	21 46 46.8	10.789
5	21 8 2.03	2.4012	21 35 55.4	10.927
6	21 10 25.97	2.3969	21 24 55.7	11.064
7	21 12 49.65	2.3925	21 13 47.8	11.200
8	21 15 13.07	2.3882	21 2 31.8	11.333
9	21 17 36.23	2.3838	20 51 7.9	11.465
10	21 19 59.12	2.3793	20 39 36.0	11.597
11	21 22 21.74	2.3748	20 27 56.3	11.727
12	21 24 44.09	2.3703	20 16 8.8	11.855
13	21 27 6.17	2.3658	20 4 13.7	11.982
14	21 29 27.98	2.3613	19 52 11.0	12.108
15	21 31 49.52	2.3567	19 40 0.8	12.231
16	21 34 10.78	2.3521	19 27 43.3	12.353
17	21 36 31.77	2.3476	19 15 18.5	12.474
18	21 38 52.49	2.3430	19 2 46.4	12.594
19	21 41 12.93	2.3384	18 50 7.2	12.712
20	21 43 33.10	2.3338	18 37 21.0	12.828
21	21 45 53.00	2.3293	18 24 27.9	12.942
22	21 48 12.62	2.3247	18 11 28.0	13.055
23	21 50 31.97	2.3202	S. 17 58 21.3	13.168

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 52 51.05	2.3157	S. 17 45 7.9	13.278
1	21 55 9.86	2.3112	17 31 48.0	13.386
2	21 57 28.40	2.3066	17 18 21.6	13.494
3	21 59 46.66	2.3021	17 4 48.8	13.599
4	22 2 4.65	2.2976	16 51 9.8	13.702
5	22 4 22.38	2.2932	16 37 24.6	13.803
6	22 6 39.84	2.2887	16 23 33.4	13.903
7	22 8 57.03	2.2843	16 9 36.2	14.003
8	22 11 13.96	2.2800	15 55 33.1	14.100
9	22 13 30.64	2.2757	15 41 24.2	14.195
10	22 15 47.05	2.2714	15 27 9.7	14.289
11	22 18 3.20	2.2671	15 12 49.6	14.381
12	22 20 19.10	2.2628	14 58 24.0	14.472
13	22 22 34.74	2.2586	14 43 53.0	14.560
14	22 24 50.13	2.2544	14 29 16.8	14.647
15	22 27 5.28	2.2503	14 14 35.4	14.733
16	22 29 20.18	2.2462	13 59 48.9	14.816
17	22 31 34.83	2.2422	13 44 57.5	14.898
18	22 33 49.24	2.2382	13 30 1.2	14.978
19	22 36 3.41	2.2342	13 15 0.1	15.058
20	22 38 17.35	2.2304	12 59 54.3	15.135
21	22 40 31.06	2.2266	12 44 44.0	15.210
22	22 42 44.54	2.2227	12 29 29.2	15.284
23	22 44 57.79	2.2189	12 14 10.0	15.356
24	22 47 10.81	2.2152	S. 11 58 46.5	15.426

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s		° ′ ″	″
0	22 47 10.81	2.2152	S. 11 58 46.5	15.426
1	22 49 23.62	2.2116	11 43 18.9	15.494
2	22 51 36.21	2.2080	11 27 47.2	15.562
3	22 53 48.58	2.2044	11 12 11.5	15.628
4	22 56 0.74	2.2010	10 56 31.9	15.691
5	22 58 12.70	2.1977	10 40 48.6	15.753
6	23 0 24.47	2.1944	10 25 1.6	15.813
7	23 2 36.04	2.1911	10 9 11.1	15.871
8	23 4 47.41	2.1878	9 53 17.1	15.929
9	23 6 58.58	2.1846	9 37 19.7	15.984
10	23 9 9.56	2.1815	9 21 19.1	16.037
11	23 11 20.37	2.1785	9 5 15.3	16.088
12	23 13 30.99	2.1755	8 49 8.5	16.138
13	23 15 41.44	2.1727	8 32 58.7	16.187
14	23 17 51.73	2.1700	8 16 46.1	16.234
15	23 20 1.85	2.1673	8 0 30.7	16.280
16	23 22 11.81	2.1646	7 44 12.6	16.323
17	23 24 21.61	2.1620	7 27 52.0	16.364
18	23 26 31.25	2.1595	7 11 28.9	16.404
19	23 28 40.74	2.1571	6 55 3.5	16.443
20	23 30 50.10	2.1548	6 38 35.8	16.480
21	23 32 59.32	2.1525	6 22 6.0	16.515
22	23 35 8.40	2.1502	6 5 34.1	16.549
23	23 37 17.35	2.1480	S. 5 49 0.2	16.580

SATURDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 39 26.17	2.1460	S. 5 32 24.5	16.610

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, . .	6	6	1.8
● New Moon, . .	13	4	28.3
☽ First Quarter, . .	21	1	31.6
○ Full Moon, . . .	28	16	42.8

	d	h
☾ Perigee, ...	6	17.4
☾ Apogee, ...	20	6.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Spica	W.	98 35 3	2461	100 17 11	2453	101 59 30	2445	103 42 0	2438
	Antares	W.	52 41 5	2458	54 23 18	2450	56 5 42	2442	57 48 17	2434
	α Pegasi	E.	55 39 43	3003	54 9 34	3018	52 39 44	3036	51 10 16	3058
	α Arietis	E.	95 47 16	2518	94 6 28	2510	92 25 28	2502	90 44 17	2494
2	Antares	W.	66 23 53	2398	68 7 30	2392	69 51 16	2386	71 35 11	2380
	α Pegasi	E.	43 51 12	3229	42 25 37	3281	41 1 3	3339	39 37 37	3406
	α Arietis	E.	82 15 48	2460	80 33 39	2455	78 51 22	2449	77 8 57	2444
	Aldebaran	E.	112 38 35	2450	110 56 12	2443	109 13 38	2435	107 30 53	2428
3	Antares	W.	80 16 48	2353	82 1 30	2349	83 46 18	2344	85 31 13	2339
	α Aquilæ	W.	43 35 13	4680	44 36 29	4528	45 39 56	4394	46 45 23	4270
	Saturn	W.	15 54 56	2475	17 36 45	2447	19 19 13	2424	21 2 14	2404
	α Arietis	E.	68 35 15	2424	66 52 15	2422	65 9 11	2419	63 26 4	2417
	Aldebaran	E.	98 54 53	2398	97 11 16	2394	95 27 32	2389	93 43 42	2385
	Sun	E.	132 32 52	2685	130 55 52	2679	129 18 44	2673	127 41 28	2667
4	Antares	W.	94 17 17	2322	96 2 45	2318	97 48 18	2315	99 33 55	2312
	α Aquilæ	W.	52 38 17	3807	53 53 12	3738	55 9 19	3675	56 26 33	3616
	Saturn	W.	29 42 50	2346	31 27 42	2339	33 12 45	2332	34 57 58	2326
	α Arietis	E.	54 50 0	2415	53 6 47	2417	51 23 36	2418	49 40 27	2422
	Aldebaran	E.	85 3 2	2366	83 18 39	2364	81 34 12	2362	79 49 42	2359
	Sun	E.	119 33 23	2644	117 55 28	2640	116 17 27	2636	114 39 21	2633
5	α Aquilæ	W.	63 6 53	3393	64 29 18	3358	65 52 22	3327	67 16 2	3299
	Saturn	W.	43 45 58	2304	45 31 52	2300	47 17 52	2297	49 3 56	2294
	Fomalhaut	W.	30 3 10	3119	31 30 56	3038	33 0 22	2969	34 31 14	2909
	α Arietis	E.	41 6 11	2450	39 23 48	2460	37 41 39	2472	35 59 46	2485
	Aldebaran	E.	71 6 25	2351	69 21 40	2350	67 36 53	2350	65 52 6	2350
	Sun	E.	106 27 48	2618	104 49 18	2616	103 10 45	2614	101 32 9	2612
6	α Aquilæ	W.	74 21 41	3193	75 47 59	3178	77 14 35	3164	78 41 27	3153
	Saturn	W.	57 55 10	2284	59 41 33	2282	61 27 59	2281	63 14 26	2280
	Fomalhaut	W.	42 21 43	2707	43 58 13	2680	45 35 20	2656	47 12 59	2635
	Aldebaran	E.	57 8 18	2354	55 23 37	2356	53 38 59	2359	51 54 25	2362
	Sun	E.	93 18 35	2605	91 39 47	2604	90 0 58	2604	88 22 8	2603
7	α Aquilæ	W.	85 58 32	3120	87 26 17	3118	88 54 5	3117	90 21 54	3119
	Saturn	W.	72 7 1	2277	73 53 34	2277	75 40 7	2278	77 26 39	2278
	Fomalhaut	W.	55 27 29	2559	57 7 21	2548	58 47 27	2539	60 27 46	2531
	α Pegasi	W.	38 19 12	3307	39 43 15	3232	41 8 46	3168	42 35 34	3110
	Aldebaran	E.	43 13 1	2388	41 29 9	2395	39 45 27	2404	38 1 58	2415
	Sun	E.	80 7 50	2603	78 28 59	2603	76 50 8	2604	75 11 18	2605
8	α Aquilæ	W.	97 40 3	3146	99 7 17	3156	100 34 19	3167	102 1 8	3180
	Saturn	W.	86 19 8	2283	88 5 33	2284	89 51 56	2286	91 38 16	2288
	Fomalhaut	W.	68 51 44	2504	70 32 52	2501	72 14 4	2499	73 55 19	2497
	α Pegasi	W.	50 4 38	2909	51 36 46	2880	53 9 31	2855	54 42 48	2832
	Aldebaran	E.	29 29 14	2501	27 48 2	2528	26 7 28	2561	24 27 40	2603
	Sun	E.	66 57 36	2612	65 18 58	2615	63 40 24	2618	62 1 53	2621
9	Saturn	W.	100 29 8	2301	102 15 6	2304	104 0 59	2308	105 46 47	2311
	Fomalhaut	W.	82 21 52	2498	84 3 8	2500	85 44 21	2503	87 25 30	2506
	α Pegasi	W.	62 35 23	2756	64 10 49	2745	65 46 29	2737	67 22 20	2730
	Sun	E.	53 50 22	2638	52 12 19	2643	50 34 23	2648	48 56 33	2654

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Spica	W.	105° 24′ 41″	2430	107° 7′ 33″	2423	108° 50′ 35″	2417	110° 33′ 46″	2410
	Antares	W.	59 31 3	2426	61 14 0	2419	62 57 8	2412	64 40 26	2405
	α Pegasi	E.	49 41 15	3084	48 12 46	3113	46 44 52	3147	45 17 39	3185
	α Arietis	E.	89 2 55	2487	87 21 23	2479	85 39 40	2472	83 57 48	2467
2	Antares	W.	73 19 15	2374	75 3 27	2369	76 47 46	2364	78 32 13	2358
	α Pegasi	E.	38 15 27	3483	36 54 44	3573	35 35 40	3676	34 18 27	3794
	α Arietis	E.	75 26 25	2439	73 43 46	2435	72 1 1	2431	70 18 11	2427
	Aldebaran	E.	105 47 58	2422	104 4 54	2416	102 21 42	2410	100 38 22	2404
3	Antares	W.	87 16 15	2335	89 1 23	2332	90 46 36	2328	92 31 54	2325
	α Aquilæ	W.	47 52 43	4160	49 1 47	4059	50 12 29	3967	51 24 41	3884
	Saturn	W.	22 45 43	2388	24 29 35	2375	26 13 45	2364	27 58 11	2355
	α Arietis	E.	61 42 54	2416	59 59 42	2415	58 16 28	2415	56 33 14	2415
	Aldebaran	E.	91 59 46	2380	90 15 43	2376	88 31 34	2373	86 47 20	2370
	Sun	E.	126 4 4	2662	124 26 33	2657	122 48 56	2653	121 11 13	2648
4	Antares	W.	101 19 37	2309	103 5 23	2307	104 51 12	2304	106 37 5	2302
	α Aquilæ	W.	57 44 50	3563	59 4 5	3515	60 24 13	3471	61 45 10	3430
	Saturn	W.	36 43 20	2321	38 28 49	2315	40 14 26	2311	42 0 9	2307
	α Arietis	E.	47 57 23	2425	46 14 24	2429	44 31 31	2435	42 48 46	2442
	Aldebaran	E.	78 5 8	2357	76 20 31	2355	74 35 51	2353	72 51 9	2352
	Sun	E.	113 1 11	2629	111 22 56	2626	109 44 37	2624	108 6 14	2621
5	α Aquilæ	W.	68 40 15	3273	70 4 58	3250	71 30 8	3229	72 55 43	3209
	Saturn	W.	50 50 4	2291	52 36 16	2289	54 22 31	2287	56 8 49	2285
	Fomalhaut	W.	36 3 22	2856	37 36 37	2811	39 10 50	2772	40 45 54	2738
	α Arietis	E.	34 18 12	2502	32 37 2	2523	30 56 21	2547	29 16 13	2574
	Aldebaran	E.	64 7 19	2350	62 22 32	2350	60 37 46	2351	58 53 1	2353
	Sun	E.	99 53 31	2610	98 14 50	2609	96 36 7	2607	94 57 22	2606
6	α Aquilæ	W.	80 8 32	3143	81 35 49	3135	83 3 16	3129	84 30 51	3124
	Saturn	W.	65 0 55	2279	66 47 25	2279	68 33 56	2278	70 20 28	2277
	Fomalhaut	W.	48 51 7	2616	50 29 40	2599	52 8 37	2584	53 47 54	2571
	Aldebaran	E.	50 9 56	2366	48 25 32	2370	46 41 14	2375	44 57 3	2381
	Sun	E.	86 43 17	2603	85 4 26	2602	83 25 34	2602	81 46 42	2602
7	α Aquilæ	W.	91 49 41	3121	93 17 25	3124	94 45 5	3130	96 12 38	3137
	Saturn	W.	79 13 11	2279	80 59 42	2279	82 46 12	2280	84 32 41	2281
	Fomalhaut	W.	62 8 16	2524	63 48 56	2517	65 29 45	2512	67 10 41	2507
	α Pegasi	W.	44 3 31	3060	45 32 30	3014	47 2 25	2974	48 33 10	2940
	Aldebaran	E.	36 18 44	2426	34 35 47	2441	32 53 11	2458	31 10 59	2477
	Sun	E.	73 32 30	2607	71 53 44	2607	70 14 59	2609	68 36 16	2611
8	α Aquilæ	W.	103 27 41	3196	104 53 55	3213	106 19 49	3232	107 45 20	3255
	Saturn	W.	93 24 33	2290	95 10 47	2292	96 56 58	2295	98 43 5	2298
	Fomalhaut	W.	75 36 37	2496	77 17 56	2496	78 59 15	2496	80 40 34	2497
	α Pegasi	W.	56 16 34	2812	57 50 46	2795	59 25 20	2781	61 0 13	2768
	Aldebaran	E.	22 48 49	2654	21 11 7	2719	19 34 52	2801	18 0 25	2903
	Sun	E.	60 23 26	2624	58 45 3	2626	57 6 44	2630	55 28 30	2635
9	Saturn	W.	107 32 30	2315	109 18 7	2320	111 3 37	2324	112 49 1	2329
	Fomalhaut	W.	89 6 35	2510	90 47 35	2514	92 28 29	2520	94 9 15	2525
	α Pegasi	W.	68 58 20	2724	70 34 28	2719	72 10 42	2716	73 47 0	2714
	Sun	E.	47 18 51	2660	45 41 17	2666	44 3 51	2672	42 26 34	2679

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Fomalhaut	W.	95° 49′ 54″	2530	97° 30′ 25″	2538	99° 10′ 46″	2545	100° 50′ 57″	2553
	α Pegasi	W.	75 23 21	2713	76 59 43	2713	78 36 6	2713	80 12 28	2716
	α Arietis	W.	31 55 23	2560	33 35 13	2545	35 15 23	2535	36 55 48	2526
	Sun	E.	40 49 26	2687	39 12 29	2695	37 35 43	2704	35 59 8	2714
15	Sun	W.	22 36 41	3169	24 3 27	3173	25 30 9	3177	26 56 46	3182
	Jupiter	E.	41 33 43	2782	39 58 51	2795	38 24 16	2808	36 49 58	2821
	Spica	E.	67 31 1	2734	65 55 6	2747	64 19 29	2760	62 44 9	2772
16	Sun	W.	34 7 52	3222	35 33 35	3232	36 59 6	3242	38 24 26	3251
	Jupiter	E.	29 2 40	2886	27 30 3	2898	25 57 42	2912	24 25 38	2924
	Spica	E.	54 51 33	2835	53 17 50	2847	51 44 23	2859	50 11 12	2871
	Antares	E.	100 43 54	2828	99 10 3	2840	97 36 27	2852	96 3 6	2863
17	Sun	W.	45 28 13	3300	46 52 24	3311	48 16 23	3320	49 40 11	3330
	Spica	E.	42 29 1	2929	40 57 19	2939	39 25 50	2950	37 54 35	2961
	Antares	E.	88 19 58	2918	86 48 2	2928	85 16 19	2938	83 44 48	2948
18	Sun	W.	56 36 33	3373	57 59 20	3380	59 21 59	3388	60 44 29	3395
	Regulus	W.	24 14 7	3051	25 43 17	3053	27 12 24	3056	28 41 28	3058
	Venus	W.	20 22 9	3480	21 42 55	3484	23 3 37	3488	24 24 14	3493
	Spica	E.	30 21 37	3012	28 51 39	3022	27 21 54	3032	25 52 21	3043
	Antares	E.	76 10 11	2991	74 39 47	2999	73 9 33	3007	71 39 29	3014
19	Sun	W.	67 35 7	3424	68 56 56	3430	70 18 39	3433	71 40 18	3438
	Regulus	W.	36 6 1	3071	37 34 46	3074	39 3 27	3077	40 32 5	3078
	Venus	W.	31 6 9	3514	32 26 18	3517	33 46 23	3520	35 6 25	3523
	Antares	E.	64 11 9	3043	62 41 50	3047	61 12 36	3052	59 43 28	3056
20	Sun	W.	78 27 38	3449	79 48 59	3450	81 10 19	3450	82 31 39	3450
	Regulus	W.	47 54 45	3085	49 23 13	3065	50 51 41	3084	52 20 10	3083
	Venus	W.	41 45 54	3532	43 5 43	3532	44 25 32	3532	45 45 21	3531
	Jupiter	W.	18 54 33	3138	20 21 57	3137	21 49 22	3135	23 16 49	3134
	Antares	E.	52 18 44	3068	50 49 55	3069	49 21 7	3069	47 52 20	3069
	α Aquilæ	E.	101 30 59	3935	100 18 15	3928	99 5 24	3922	97 52 27	3917
21	Sun	W.	89 18 32	3442	90 40 1	3438	92 1 34	3435	93 23 11	3431
	Regulus	W.	59 42 58	3073	61 11 40	3070	62 40 26	3067	64 9 16	3062
	Venus	W.	52 24 48	3521	53 44 49	3517	55 4 54	3513	56 25 4	3508
	Jupiter	W.	30 34 32	3123	32 2 14	3119	33 30 0	3115	34 57 51	3111
	Antares	E.	40 28 15	3063	38 59 20	3060	37 30 22	3057	36 1 20	3053
	α Aquilæ	E.	91 46 17	3892	90 32 49	3889	89 19 18	3886	88 5 44	3884
	Saturn	E.	104 8 43	3044	102 39 25	3042	101 10 4	3039	99 40 39	3034
22	Sun	W.	100 12 38	3402	101 34 52	3396	102 57 13	3388	104 19 43	3380
	Regulus	W.	71 34 59	3034	73 4 29	3027	74 34 8	3020	76 3 56	3013
	Venus	W.	63 7 22	3478	64 28 11	3470	65 49 9	3462	67 10 16	3454
	Jupiter	W.	42 18 33	3083	43 47 3	3077	45 15 41	3069	46 44 28	3061
	Antares	E.	28 34 53	3030	27 5 17	3023	25 35 33	3018	24 5 42	3011
	α Aquilæ	E.	81 57 28	3879	80 43 47	3879	79 30 6	3881	78 16 27	3883
	Saturn	E.	92 12 8	3008	90 42 5	3001	89 11 53	2994	87 41 33	2986
23	Sun	W.	111 14 41	3334	112 38 13	3323	114 1 58	3313	115 25 55	3300
	Venus	W.	73 58 25	3403	75 20 38	3393	76 43 3	3381	78 5 41	3368
	Jupiter	W.	54 10 58	3016	55 40 51	3006	57 10 56	2996	58 41 14	2985

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Fomalhaut	W.	102° 30′ 57″	2561	104° 10′ 45″	2570	105° 50′ 21″	2580	107° 29′ 43″	2591
	α Pegasi	W.	81 48 47	2719	83 25 2	2722	85 1 13	2726	86 37 18	2732
	α Arietis	W.	38 36 25	2520	40 17 11	2515	41 58 4	2512	43 39 1	2510
	Sun	E.	34 22 47	2725	32 46 40	2737	31 10 49	2748	29 35 13	2763
15	Sun	W.	28 23 17	3188	29 49 40	3195	31 15 55	3204	32 41 59	3214
	Jupiter	E.	35 15 57	2834	33 42 13	2846	32 8 45	2859	30 35 34	2873
	Spica	E.	61 9 5	2785	59 34 18	2798	57 59 47	2810	56 25 32	2822
16	Sun	W.	39 49 35	3261	41 14 32	3271	42 39 17	3281	44 3 51	3291
	Jupiter	E.	22 53 50	2938	21 22 19	2951	19 51 5	2965	18 20 8	2978
	Spica	E.	48 38 16	2883	47 5 35	2894	45 33 9	2906	44 0 58	2917
	Antares	E.	94 30 0	2874	92 57 8	2886	91 24 31	2897	89 52 8	2907
17	Sun	W.	51 3 48	3339	52 27 14	3348	53 50 30	3357	55 13 36	3365
	Spica	E.	36 23 33	2971	34 52 44	2982	33 22 9	2993	31 51 47	3002
	Antares	E.	82 13 30	2958	80 42 24	2966	79 11 29	2975	77 40 45	2983
18	Sun	W.	62 6 51	3402	63 29 5	3408	64 51 12	3414	66 13 13	3420
	Regulus	W.	30 10 29	3060	31 39 27	3063	33 8 22	3066	34 37 13	3069
	Venus	W.	25 44 46	3497	27 5 14	3501	28 25 37	3506	29 45 55	3509
	Spica	E.	24 23 1	3053	22 53 54	3064	21 25 0	3074	19 56 19	3087
	Antares	E.	70 9 34	3021	68 39 47	3026	67 10 7	3032	65 40 34	3039
19	Sun	W.	73 1 52	3440	74 23 23	3444	75 44 50	3446	77 6 15	3447
	Regulus	W.	42 0 41	3081	43 29 14	3082	44 57 46	3083	46 26 16	3084
	Venus	W.	36 26 24	3525	37 46 20	3528	39 6 13	3530	40 26 4	3531
	Antares	E.	58 14 24	3059	56 45 24	3062	55 16 28	3065	53 47 35	3066
20	Sun	W.	83 52 59	3449	85 14 20	3448	86 35 42	3446	87 57 6	3445
	Regulus	W.	53 48 40	3082	55 17 11	3081	56 45 44	3078	58 14 20	3077
	Venus	W.	47 5 11	3530	48 25 2	3528	49 44 55	3526	51 4 50	3524
	Jupiter	W.	24 44 17	3133	26 11 47	3131	27 39 19	3129	29 6 54	3126
	Antares	E.	46 23 33	3069	44 54 46	3069	43 25 58	3067	41 57 8	3065
	α Aquilæ	E.	96 39 24	3911	95 26 15	3905	94 13 0	3901	92 59 41	3896
21	Sun	W.	94 44 53	3426	96 6 40	3421	97 28 33	3415	98 50 32	3409
	Regulus	W.	65 38 12	3057	67 7 14	3052	68 36 22	3047	70 5 37	3041
	Venus	W.	57 45 19	3503	59 5 40	3497	60 26 7	3491	61 46 41	3485
	Jupiter	W.	36 25 47	3106	37 53 49	3101	39 21 57	3096	40 50 11	3090
	Antares	E.	34 32 13	3050	33 3 2	3045	31 33 45	3040	30 4 22	3035
	α Aquilæ	E.	86 52 8	3882	85 38 30	3880	84 24 50	3879	83 11 9	3879
	Saturn	E.	98 11 9	3030	96 41 33	3025	95 11 51	3020	93 42 3	3014
22	Sun	W.	105 42 22	3372	107 5 11	3363	108 28 10	3353	109 51 20	3344
	Regulus	W.	77 33 53	3005	79 4 0	2996	80 34 18	2987	82 4 47	2977
	Venus	W.	68 31 32	3445	69 52 58	3435	71 14 35	3424	72 36 24	3414
	Jupiter	W.	48 13 25	3053	49 42 32	3045	51 11 49	3036	52 41 17	3026
	Antares	E.	22 35 43	3005	21 5 36	2997	19 35 20	2991	18 4 56	2984
	α Aquilæ	E.	77 2 50	3886	75 49 16	3889	74 35 45	3894	73 22 19	3899
	Saturn	E.	86 11 3	2978	84 40 23	2969	83 9 32	2962	81 38 31	2952
23	Sun	W.	116 50 6	3289	118 14 30	3278	119 39 7	3265	121 3 59	3253
	Venus	W.	79 28 34	3356	80 51 41	3344	82 15 2	3331	83 38 38	3317
	Jupiter	W.	60 11 46	2973	61 42 32	2962	63 13 32	2950	64 44 47	2938

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Spica	W.	29° 32′ 57″	2977	31° 3′ 38″	2966	32° 34′ 33″	2955	34° 5′ 42″	2943
	α Aquilæ	E.	72 8 58	3905	70 55 43	3913	69 42 36	3922	68 29 39	3933
	Saturn	E.	80 7 18	2942	78 35 53	2933	77 4 16	2923	75 32 26	2912
	Fomalhaut	E.	99 5 38	3149	97 38 28	3138	96 11 5	3127	94 43 28	3115
24	Sun	W.	122 29 5	3240	123 54 27	3228	125 20 3	3214	126 45 55	3202
	Venus	W.	85 2 30	3303	86 26 38	3289	87 51 2	3275	89 15 43	3259
	Jupiter	W.	66 16 18	2925	67 48 5	2912	69 20 8	2899	70 52 28	2887
	Spica	W.	41 45 25	2879	43 18 11	2865	44 51 15	2852	46 24 36	2838
	α Aquilæ	E.	62 28 1	4011	61 16 32	4032	60 5 24	4056	58 54 40	4085
	Saturn	E.	67 49 45	2855	66 16 28	2842	64 42 55	2830	63 9 6	2818
	Fomalhaut	E.	87 21 50	3056	85 52 47	3044	84 23 29	3033	82 53 57	3021
	α Pegasi	E.	107 44 22	3249	106 19 11	3230	104 53 37	3211	103 27 41	3193
25	Venus	W.	96 23 34	3183	97 50 3	3168	99 16 51	3151	100 43 59	3135
	Jupiter	W.	78 38 29	2816	80 12 36	2801	81 47 2	2787	83 21 47	2772
	Spica	W.	54 15 50	2767	55 51 1	2752	57 26 32	2738	59 2 22	2723
	α Aquilæ	E.	53 8 56	4283	52 1 48	4338	50 55 30	4398	49 50 7	4465
	Saturn	E.	55 15 47	2750	53 40 14	2738	52 4 24	2724	50 28 16	2710
	Fomalhaut	E.	75 22 37	2963	73 51 38	2952	72 20 25	2942	70 48 59	2931
	α Pegasi	E.	96 12 48	3109	94 44 49	3092	93 16 30	3077	91 47 52	3061
26	Jupiter	W.	91 20 25	2698	92 57 8	2682	94 34 12	2667	96 11 36	2652
	Spica	W.	67 6 30	2647	68 44 21	2632	70 22 32	2618	72 1 3	2602
	Antares	W.	21 12 19	2653	22 50 2	2636	24 28 8	2620	26 6 36	2604
	Saturn	E.	42 22 59	2642	40 45 1	2629	39 6 45	2615	37 28 11	2603
	Fomalhaut	E.	63 8 38	2886	61 36 1	2878	60 3 14	2872	58 30 19	2866
	α Pegasi	E.	84 20 9	2992	82 49 46	2979	81 19 7	2967	79 48 13	2955
27	Spica	W.	80 18 47	2528	81 59 21	2515	83 40 14	2500	85 21 27	2487
	Antares	W.	34 24 15	2528	36 4 49	2513	37 45 44	2499	39 26 59	2485
	Saturn	E.	29 11 19	2548	27 31 13	2540	25 50 56	2533	24 10 29	2527
	Fomalhaut	E.	50 44 28	2858	49 11 15	2861	47 38 6	2866	46 5 3	2874
	α Pegasi	E.	72 10 27	2911	70 38 22	2905	69 6 9	2899	67 33 49	2895
28	Spica	W.	93 52 20	2420	95 35 26	2408	97 18 50	2395	99 2 32	2383
	Antares	W.	47 58 7	2417	49 41 17	2405	51 24 45	2392	53 8 31	2380
	α Pegasi	E.	59 51 29	2898	58 19 7	2903	56 46 52	2911	55 14 47	2921
	α Arietis	E.	100 26 26	2477	98 44 40	2463	97 2 35	2450	95 20 12	2438
29	Antares	W.	61 51 27	2326	63 36 48	2316	65 22 24	2307	67 8 14	2298
	α Pegasi	E.	47 38 55	3022	46 9 9	3055	44 40 4	3093	43 11 46	3138
	α Arietis	E.	86 44 8	2384	85 0 10	2375	83 15 59	2366	81 31 35	2357
	Aldebaran	E.	117 8 41	2384	115 24 43	2373	113 40 29	2362	111 55 59	2352
30	Antares	W.	76 0 27	2260	77 47 26	2253	79 34 34	2247	81 21 51	2242
	α Aquilæ	W.	41 8 34	5031	42 5 5	4828	43 4 18	4646	44 6 3	4485
	α Arietis	E.	72 46 49	2324	71 1 24	2319	69 15 52	2315	67 30 14	2311
	Aldebaran	E.	103 10 4	2309	101 24 17	2302	99 38 20	2295	97 52 13	2289
31	Antares	W.	90 20 7	2220	92 8 4	2218	93 56 5	2216	95 44 9	2214
	α Aquilæ	W.	49 46 51	3887	51 0 24	3799	52 15 27	3720	53 31 53	3649
	Saturn	W.	27 36 3	2246	29 23 22	2237	31 10 54	2231	32 58 36	2225
	α Arietis	E.	58 41 1	2302	56 55 5	2302	55 9 9	2304	53 23 16	2307
	Aldebaran	E.	88 59 46	2268	87 12 59	2265	85 26 8	2263	83 39 14	2262

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Spica	W.	35° 37′ 6″	2931	37° 8′ 46″	2917	38° 40′ 43″	2905	40° 12′ 56″	2892
	α Aquilæ	E.	67 16 53	3944	66 4 18	3957	64 51 56	3973	63 39 50	3990
	Saturn	E.	74 0 22	2901	72 28 4	2890	70 55 32	2879	69 22 46	2867
	Fomalhaut	E.	93 15 37	3104	91 47 32	3091	90 19 12	3080	88 50 38	3069
24	Sun	W.	128 12 2	3188	129 38 26	3174	131 5 6	3160	132 32 3	3147
	Venus	W.	90 40 42	3245	92 5 58	3230	93 31 32	3214	94 57 24	3199
	Jupiter	W.	72 25 4	2873	73 57 58	2859	75 31 10	2845	76 4 40	2830
	Spica	W.	47 58 14	2825	49 32 10	2810	51 6 25	2796	52 40 58	2782
	α Aquilæ	E.	57 44 24	4116	56 34 38	4151	55 25 25	4191	54 16 50	4234
	Saturn	E.	61 35 1	2805	60 0 39	2791	58 25 59	2778	56 51 2	2764
	Fomalhaut	E.	81 24 10	3009	79 54 8	2997	78 23 52	2986	76 53 22	2974
	α Pegasi	E.	102 1 24	3176	100 34 46	3158	99 7 47	3142	97 40 28	3124
25	Venus	W.	102 11 26	3119	103 39 13	3103	105 7 19	3087	106 35 45	3070
	Jupiter	W.	84 56 51	2757	86 32 15	2742	88 7 59	2728	89 44 2	2713
	Spica	W.	60 38 31	2708	62 15 0	2692	63 51 50	2678	65 29 0	2663
	α Aquilæ	E.	48 45 44	4540	47 42 27	4625	46 40 24	4722	45 39 43	4831
	Saturn	E.	48 51 49	2696	47 15 4	2683	45 38 1	2669	44 0 39	2655
	Fomalhaut	E.	69 17 19	2920	67 45 26	2911	66 13 21	2902	64 41 5	2894
	α Pegasi	E.	90 18 55	3047	88 49 40	3032	87 20 7	3018	85 50 16	3005
26	Jupiter	W	97 49 20	2638	99 27 24	2622	101 5 49	2607	102 44 34	2593
	Spica	W.	73 39 55	2588	75 19 7	2572	76 58 40	2558	78 38 33	2543
	Antares	W.	27 45 25	2588	29 24 36	2573	31 4 8	2558	32 44 1	2543
	Saturn	E.	35 49 20	2591	34 10 13	2580	32 30 50	2569	30 51 12	2558
	Fomalhaut	E.	56 57 17	2862	55 24 10	2859	53 50 58	2856	52 17 43	2856
	α Pegasi	E.	78 17 4	2945	76 45 42	2935	75 14 8	2927	73 42 23	2918
27	Spica	W.	87 2 59	2472	88 44 51	2459	90 27 2	2445	92 9 32	2433
	Antares	W.	41 8 34	2471	42 50 28	2457	44 32 42	2443	46 15 15	2430
	Saturn	E.	22 29 54	2525	20 49 16	2526	19 8 39	2530	17 28 8	2540
	Fomalhaut	E.	44 32 11	2885	42 59 33	2898	41 27 12	2916	39 55 14	2939
	α Pegasi	E.	66 1 24	2893	64 28 56	2891	62 56 26	2891	61 23 56	2894
28	Spica	W.	100 46 31	2372	102 30 46	2361	104 15 17	2350	106 0 3	2339
	Antares	W.	54 52 34	2368	56 36 54	2357	58 21 30	2347	60 6 21	2337
	α Pegasi	E.	53 42 55	2935	52 11 20	2950	50 40 5	2970	49 9 15	2994
	α Arietis	E.	93 37 31	2426	91 54 34	2415	90 11 21	2404	88 27 52	2394
29	Antares	W.	68 54 17	2289	70 40 33	2281	72 27 0	2274	74 13 38	2266
	α Pegasi	E.	41 44 23	3190	40 18 2	3252	38 52 54	3322	37 29 8	3402
	α Arietis	E.	79 46 59	2350	78 2 12	2342	76 17 14	2335	74 32 6	2329
	Aldebaran	E.	110 11 15	2342	108 26 17	2333	106 41 5	2324	104 55 40	2316
30	Antares	W.	83 9 16	2237	84 56 49	2232	86 44 29	2228	88 32 15	2224
	α Aquilæ	W.	45 19 8	4340	46 16 24	4207	47 24 43	4089	48 34 55	3983
	α Arietis	E.	65 44 30	2308	63 58 42	2306	62 12 51	2304	60 26 57	2302
	Aldebaran	E.	96 5 58	2284	94 19 35	2279	92 33 5	2274	90 46 28	2271
31	Antares	W.	97 32 16	2212	99 20 25	2211	101 8 36	2210	102 56 49	2208
	α Aquilæ	W.	54 49 35	3584	56 8 27	3525	57 28 24	3471	58 49 20	3423
	Saturn	W.	34 46 27	2220	36 34 25	2216	38 22 28	2213	40 10 36	2211
	α Arietis	E.	51 37 26	2310	49 51 41	2314	48 6 2	2319	46 20 30	2326
	Aldebaran	E.	81 52 18	2260	80 5 20	2259	78 18 20	2259	76 31 20	2260

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	8 45 45.57	9.707	N.18 1 10.6	−37.80	15 48.10	66.65	6 2.61	0.150
Sun.	2	8 49 38.25	9.683	17 45 54.3	38.54	15 48.23	66.56	5 58.73	0.175
Mon.	3	8 53 30.34	9.658	17 30 20.5	39.26	15 48.36	66.47	5 54.28	0.198
Tues.	4	8 57 21.85	9.634	17 14 29.7	39.97	15 48.49	66.38	5 49.25	0.222
Wed.	5	9 1 12.77	9.610	16 58 22.0	40.66	15 48.62	66.29	5 43.64	0.246
Thur.	6	9 5 3.12	9.586	16 41 57.8	41.35	15 48.76	66.21	5 37.45	0.270
Frid.	7	9 8 52.88	9.561	16 25 17.2	42.01	15 48.90	66.12	5 30.66	0.294
Sat.	8	9 12 42.07	9.538	16 8 20.8	42.67	15 49.05	66.04	5 23.31	0.317
Sun.	9	9 16 30.69	9.514	15 51 8.6	43.32	15 49.20	65.95	5 15.40	0.339
Mon.	10	9 20 18.74	9.491	15 33 41.0	43.96	15 49.36	65.87	5 6.92	0.364
Tues.	11	9 24 6.23	9.467	15 15 58.5	44.58	15 49.52	65.79	4 57.87	0.388
Wed.	12	9 27 53.14	9.444	14 58 1.2	45.20	15 49.69	65.71	4 48.26	0.411
Thur.	13	9 31 39.50	9.421	14 39 49.4	45.79	15 49.86	65.63	4 38.10	0.434
Frid.	14	9 35 25.32	9.398	14 21 23.6	46.36	15 50.04	65.55	4 27.39	0.457
Sat.	15	9 39 10.59	9.375	14 2 44.2	46.92	15 50.22	65.47	4 16.14	0.480
Sun.	16	9 42 55.30	9.353	13 43 51.3	47.47	15 50.41	65.39	4 4.34	0.503
Mon.	17	9 46 39.50	9.330	13 24 45.3	48.02	15 50.60	65.31	3 52.01	0.525
Tues.	18	9 50 23.17	9.309	13 5 26.6	48.53	15 50.79	65.23	3 39.15	0.546
Wed.	19	9 54 6.32	9.288	12 45 55.5	49.05	15 50.99	65.16	3 25.79	0.567
Thur.	20	9 57 48.97	9.267	12 26 12.5	49.54	15 51.19	65.09	3 11.92	0.588
Frid.	21	10 1 31.13	9.247	12 6 17.8	50.01	15 51.39	65.02	2 57.56	0.608
Sat.	22	10 5 12.80	9.226	11 46 11.6	50.48	15 51.60	64.95	2 42.71	0.628
Sun.	23	10 8 54.01	9.207	11 25 54.3	50.95	15 51.81	64.89	2 27.41	0.647
Mon.	24	10 12 34.77	9.189	11 5 26.2	51.39	15 52.02	64.83	2 11.66	0.665
Tues.	25	10 16 15.10	9.172	10 44 47.7	51.82	15 52.23	64.77	1 55.48	0.682
Wed.	26	10 19 55.03	9.154	10 23 59.0	52.23	15 52.45	64.72	1 38.89	0.700
Thur.	27	10 23 34.55	9.138	10 3 0.5	52.64	15 52.67	64.66	1 21.91	0.716
Frid.	28	10 27 13.70	9.123	9 41 52.4	53.03	15 52.89	64.61	1 4.55	0.731
Sat.	29	10 30 52.48	9.109	9 20 34.9	53.40	15 53.11	64.56	0 46.83	0.745
Sun.	30	10 34 30.93	9.097	8 59 8.6	53.77	15 53.33	64.51	0 28.76	0.759
Mon.	31	10 38 9.07	9.082	8 37 33.6	54.14	15 53.55	64.46	0 10.39	0.772
Tues.	32	10 41 46.91	9.069	N. 8 15 50.2	−54.48	15 53.78	64.42	0 8.27	0.785

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

— prefixed to the hourly change of declination, indicates that north declinations are decreasing, and south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subtracted from* / *added to* *Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	8 45 44.58	9.707	N.18 1 14.3	−37.80	6 2.62	0.150	8 39 41.96
Sun.	2	8 49 37.27	9.683	17 45 58.1	38.54	5 58.75	0.175	8 43 38.52
Mon.	3	8 53 29.38	9.658	17 30 24.4	39.26	5 54.31	0.198	8 47 35.07
Tues.	4	8 57 20.90	9.634	17 14 33.6	39.97	5 49.27	0.222	8 51 31.63
Wed.	5	9 1 11.84	9.610	16 58 25.9	40.66	5 43.66	0.246	8 55 28.18
Thur.	6	9 5 2.21	9.586	16 42 1.7	41.35	5 37.47	0.270	8 59 24.74
Frid.	7	9 8 51.99	9.562	16 25 21.1	42.01	5 30.69	0.294	9 3 21.30
Sat.	8	9 12 41.20	9.539	16 8 24.6	42.67	5 23.34	0.317	9 7 17.86
Sun.	9	9 16 29.84	9.515	15 51 12.4	43.32	5 15.43	0.339	9 11 14.41
Mon.	10	9 20 17.92	9.492	15 33 44.8	43.96	5 6.95	0.364	9 15 10.97
Tues.	11	9 24 5.43	9.468	15 16 2.2	44.58	4 57.91	0.388	9 19 7.52
Wed.	12	9 27 52.37	9.445	14 58 4.8	45.20	4 48.29	0.411	9 23 4.08
Thur.	13	9 31 38.76	9.422	14 39 53.0	45.79	4 38.13	0.434	9 27 0.63
Frid.	14	9 35 24.61	9.399	14 21 27.1	46.36	4 27.42	0.457	9 30 57.19
Sat.	15	9 39 9.91	9.376	14 2 47.6	46.92	4 16.17	0.480	9 34 53.74
Sun.	16	9 42 54.66	9.354	13 43 54.6	47.47	4 4.36	0.503	9 38 50.30
Mon.	17	9 46 38.89	9.331	13 24 48.5	48.02	3 52.04	0.525	9 42 46.85
Tues.	18	9 50 22.59	9.310	13 5 29.6	48.54	3 39.18	0.546	9 46 43.41
Wed.	19	9 54 5.78	9.289	12 45 58.4	49.06	3 25.82	0.567	9 50 39.96
Thur.	20	9 57 48.46	9.268	12 26 15.2	49.55	3 11.94	0.588	9 54 36.52
Frid.	21	10 1 30.66	9.248	12 6 20.3	50.02	2 57.59	0.608	9 58 33.07
Sat.	22	10 5 12.37	9.228	11 46 13.9	50.49	2 42.74	0.628	10 2 29.63
Sun.	23	10 8 53.62	9.209	11 25 56.5	50.96	2 27.44	0.647	10 6 26.18
Mon.	24	10 12 34.42	9.191	11 5 28.2	51.40	2 11.68	0.665	10 10 22.74
Tues.	25	10 16 14.79	9.174	10 44 49.4	51.83	1 55.50	0.682	10 14 19.29
Wed.	26	10 19 54.76	9.156	10 24 0.5	52.24	1 38.91	0.700	10 18 15.85
Thur.	27	10 23 34.33	9.140	10 3 1.8	52.65	1 21.93	0.716	10 22 12.40
Frid.	28	10 27 13.52	9.125	9 41 53.4	53.04	1 4.56	0.731	10 26 8.96
Sat.	29	10 30 52.35	9.111	9 20 35.7	53.40	0 46.84	0.745	10 30 5.51
Sun.	30	10 34 30.84	9.097	8 59 9.1	53.78	0 28.77	0.759	10 34 2.07
Mon.	31	10 38 9.03	9.084	8 37 33.9	54.15	0 10.41	0.772	10 37 58.62
Tues.	32	10 41 46.91	9.071	N. 8 15 50.2	−54.49	0 8.27	0.785	10 41 55.18

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
$+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	213	128 60 19.1	59 57.1	143.54	−0.38	0.0063202	−23.6	15 17 47.27
2	214	129 57 44.6	57 22.5	143.59	0.28	.0062628	24.2	15 13 51.36
3	215	130 55 11.3	54 49.1	143.64	0.15	.0062040	24.8	15 9 55.44
4	216	131 52 39.3	52 16.9	143.69	−0.02	.0061437	25.5	15 5 59.53
5	217	132 50 8.6	49 46.0	143.74	+0.11	.0060817	26.2	15 2 3.62
6	218	133 47 39.2	47 16.5	143.80	0.24	.0060179	27.0	14 58 7.71
7	219	134 45 11.1	44 48.3	143.86	0.34	.0059523	27.8	14 54 11.80
8	220	135 42 44.4	42 21.5	143.92	0.43	.0058847	28.6	14 50 15.89
9	221	136 40 19.1	39 56.0	143.98	0.49	.0058149	29.5	14 46 19.98
10	222	137 37 55.0	37 31.7	144.02	0.53	.0057429	30.4	14 42 24.07
11	223	138 35 32.2	35 8.7	144.07	0.53	.0056687	31.3	14 38 28.16
12	224	139 33 10.8	32 47.2	144.13	0.49	.0055923	32.2	14 34 32.25
13	225	140 30 50.6	30 26.9	144.18	0.44	.0055137	33.1	14 30 36.34
14	226	141 28 31.6	28 7.7	144.23	0.35	.0054329	34.0	14 26 40.43
15	227	142 26 13.8	25 49.7	144.28	0.25	.0053500	34.9	14 22 44.52
16	228	143 23 57.2	23 33.0	144.33	+0.13	.0052650	35.8	14 18 48.61
17	229	144 21 41.7	21 17.4	144.38	0.00	.0051781	36.6	14 14 52.70
18	230	145 19 27.4	19 2.9	144.43	−0.13	.0050894	37.3	14 10 56.79
19	231	146 17 14.1	16 49.4	144.47	0.27	.0049988	37.9	14 7 0.89
20	232	147 15 1.9	14 37.1	144.52	0.38	.0049068	38.6	14 3 4.98
21	233	148 12 51.0	12 25.1	144.57	0.47	.0048134	39.1	13 59 9.07
22	234	149 10 41.3	10 16.3	144.62	0.56	.0047187	39.6	13 55 13.16
23	235	150 8 32.8	8 7.7	144.67	0.62	.0046230	40.0	13 51 17.25
24	236	151 6 25.6	6 0.3	144.73	0.63	.0045263	40.4	13 47 21.34
25	237	152 4 19.7	3 54.3	144.78	0.62	.0044288	40.7	13 43 25.43
26	238	153 2 15.2	1 49.7	144.84	0.58	.0043305	41.0	13 39 29.52
27	239	153 60 12.2	59 46.6	144.91	0.50	.0042314	41.3	13 35 33.61
28	240	154 58 10.8	57 45.1	144.98	0.40	.0041316	41.6	13 31 37.70
29	241	155 56 11.1	55 45.2	145.05	0.30	.0040312	41.9	13 27 41.79
30	242	156 54 13.1	53 47.1	145.12	0.18	.0039302	42.1	13 23 45.89
31	243	157 52 16.9	51 50.8	145.20	−0.05	.0038288	42.5	13 19 49.98
32	244	158 50 22.7	49 56.5	145.28	+0.08	0.0037260	−42.9	13 15 54.07

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour. −9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 18.3	16 18.4	59 43.8	+0.14	59 44.3	−0.06	15 30.3	2.03	18.8
2	16 17.9	16 16.8	59 42.4	−0.24	59 38.5	0.41	16 18.9	2.04	19.8
3	16 15.3	16 13.3	59 32.7	0.55	59 25.4	0.67	17 8.4	2.10	20.8
4	16 10.9	16 8.2	59 16.7	0.78	59 6.8	0.86	18 0.0	2.20	21.8
5	16 5.3	16 2.1	58 56.0	0.94	58 44.3	1.00	18 54.4	2.33	22.8
6	15 58.7	15 55.2	58 32.0	1.05	58 19.1	1.09	19 51.6	2.43	23.8
7	15 51.6	15 47.8	58 5.7	1.13	57 51.9	1.16	20 50.5	2.47	24.8
8	15 44.0	15 40.0	57 37.8	1.19	57 23.4	1.21	21 49.3	2.41	25.8
9	15 36.0	15 31.9	57 8.6	1.24	56 53.6	1.26	22 45.8	2.29	26.8
10	15 27.8	15 23.7	56 38.5	1.26	56 23.3	1.26	23 38.6	2.11	27.8
11	15 19.6	15 15.5	56 8.2	1.26	55 53.2	1.24	☌		28.8
12	15 11.5	15 7.6	55 38.5	1.20	55 24.3	1.16	0 27.3	1.94	0.3
13	15 3.9	15 0.5	55 10.8	1.10	54 58.1	1.02	1 12.1	1.80	1.3
14	14 57.3	14 54.4	54 46.4	0.93	54 35.9	0.81	1 54.1	1.70	2.3
15	14 52.0	14 50.0	54 26.9	0.68	54 19.6	0.54	2 34.1	1.64	3.3
16	14 48.5	14 47.6	54 14.1	0.38	54 10.5	−0.20	3 13.4	1.64	4.3
17	14 47.2	14 47.4	54 9.2	−0.02	54 10.2	+0.18	3 53.0	1.67	5.3
18	14 48.3	14 49.9	54 13.5	+0.38	54 19.4	0.59	4 34.1	1.76	6.3
19	14 52.2	14 55.2	54 27.7	0.81	54 38.7	1.02	5 17.6	1.88	7.3
20	14 58.9	15 3.2	54 52.1	1.22	55 7.9	1.41	6 4.4	2.03	8.3
21	15 8.1	15 13.6	55 26.0	1.60	55 46.3	1.77	6 55.2	2.20	9.3
22	15 19.6	15 26.1	56 8.5	1.92	56 32.3	2.04	7 49.6	2.33	10.3
23	15 32.9	15 40.0	56 57.3	2.13	57 23.3	2.18	8 46.9	2.42	11.3
24	15 47.2	15 54.3	47 49.5	2.19	58 15.6	2.15	9 45.1	2.42	12.3
25	16 1.2	16 7.7	58 41.0	2.07	59 5.0	1.93	10 42.5	2.35	13.3
26	16 13.7	16 19.0	59 27.1	1.75	59 46.8	1.52	11 37.8	2.26	14.3
27	16 23.5	16 27.2	60 3.5	1.25	60 16.8	0.96	12 30.8	2.16	15.3
28	16 29.9	16 31.5	60 26.4	0.64	60 32.3	+0.32	13 21.8	2.10	16.3
29	16 32.0	16 31.5	60 34.2	+0.00	60 32.4	−0.30	14 12.1	2.09	17.3
30	16 30.0	16 27.6	60 27.0	−0.60	60 18.2	0.86	15 2.7	2.14	18.3
31	16 24.4	16 20.6	60 6.5	1.09	59 52.3	1.27	15 55.0	2.23	19.3
32	16 16.2	16 11.4	59 36.1	−1.41	59 18.5	−1.52	16 49.6	2.33	20.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 39 26.17	2.1460	S. 5 32 24.5	16.610
1	23 41 34.87	2.1441	5 15 47.0	16.638
2	23 43 43.46	2.1422	4 59 7.9	16.665
3	23 45 51.94	2.1404	4 42 27.2	16.691
4	23 48 0.31	2.1386	4 25 45.0	16.714
5	23 50 8.58	2.1370	4 9 1.5	16.736
6	23 52 16.76	2.1355	3 52 16.7	16.756
7	23 54 24.85	2.1340	3 35 30.7	16.775
8	23 56 32.85	2.1325	3 18 43.6	16.793
9	23 58 40.76	2.1312	3 1 55.5	16.809
10	0 0 48.59	2.1300	2 45 6.6	16.822
11	0 2 56.36	2.1290	2 28 16.9	16.834
12	0 5 4.07	2.1280	2 11 26.5	16.844
13	0 7 11.72	2.1270	1 54 35.6	16.853
14	0 9 19.31	2.1259	1 37 44.1	16.862
15	0 11 26.83	2.1249	1 20 52.2	16.868
16	0 13 34.30	2.1243	1 4 0.0	16.872
17	0 15 41.75	2.1239	0 47 7.6	16.874
18	0 17 49.17	2.1234	0 30 15.1	16.875
19	0 19 56.56	2.1228	S. 0 13 22.6	16.874
20	0 22 3.91	2.1223	N. 0 3 29.8	16.872
21	0 24 11.23	2.1219	0 20 22.1	16.869
22	0 26 18.54	2.1218	0 37 14.1	16.863
23	0 28 25.85	2.1218	N. 0 54 5.7	16.856

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 30 33.15	2.1217	N. 1 10 56.9	16.848
1	0 32 40.45	2.1218	1 27 47.5	16.838
2	0 34 47.76	2.1218	1 44 37.5	16.827
3	0 36 55.07	2.1220	2 1 26.8	16.814
4	0 39 2.40	2.1223	2 18 15.2	16.799
5	0 41 9.75	2.1227	2 35 2.6	16.783
6	0 43 17.13	2.1232	2 51 49.1	16.765
7	0 45 24.54	2.1238	3 8 34.5	16.746
8	0 47 31.99	2.1244	3 25 18.6	16.724
9	0 49 39.47	2.1251	3 42 1.4	16.701
10	0 51 47.00	2.1260	3 58 42.8	16.677
11	0 53 54.59	2.1269	4 15 22.7	16.652
12	0 56 2.23	2.1278	4 32 1.1	16.625
13	0 58 9.93	2.1289	4 48 37.8	16.597
14	1 0 17.70	2.1301	5 5 12.7	16.567
15	1 2 25.54	2.1313	5 21 45.8	16.535
16	1 4 33.46	2.1327	5 38 16.9	16.502
17	1 6 41.46	2.1340	5 54 46.0	16.468
18	1 8 49.54	2.1355	6 11 13.0	16.432
19	1 10 57.72	2.1372	6 27 37.8	16.394
20	1 13 6.00	2.1388	6 44 0.2	16.354
21	1 15 14.37	2.1404	7 0 20.2	16.313
22	1 17 22.84	2.1422	7 16 37.7	16.271
23	1 19 31.43	2.1442	7 32 52.6	16.227
24	1 21 40.15	2.1463	N. 7 49 4.9	16.181

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 21 40.15	2.1463	N. 7 49 4.9	16.181
1	1 23 48.99	2.1483	8 5 14.4	16.134
2	1 25 57.95	2.1503	8 21 21.0	16.086
3	1 28 7.02	2.1523	8 37 24.7	16.037
4	1 30 16.22	2.1546	8 53 25.4	15.985
5	1 32 25.58	2.1573	9 9 22.9	15.932
6	1 34 35.10	2.1599	9 25 17.2	15.878
7	1 36 44.77	2.1623	9 41 8.2	15.822
8	1 38 54.58	2.1647	9 56 55.8	15.764
9	1 41 4.53	2.1672	10 12 39.8	15.705
10	1 43 14.64	2.1700	10 28 20.3	15.644
11	1 45 24.94	2.1731	10 43 57.1	15.582
12	1 47 35.42	2.1761	10 59 30.1	15.518
13	1 49 46.08	2.1790	11 14 59.3	15.453
14	1 51 56.91	2.1818	11 30 24.5	15.386
15	1 54 7.90	2.1848	11 45 45.7	15.318
16	1 56 19.08	2.1880	12 1 2.8	15.249
17	1 58 30.47	2.1915	12 16 15.7	15.178
18	2 0 42.07	2.1950	12 31 24.3	15.107
19	2 2 53.87	2.1983	12 46 28.5	15.033
20	2 5 5.86	2.2015	13 1 28.2	14.957
21	2 7 18.05	2.2049	13 16 23.3	14.880
22	2 9 30.45	2.2086	13 31 13.8	14.802
23	2 11 43.08	2.2123	N.13 45 59.5	14.722

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 13 55.93	2.2160	N.14 0 40.4	14.641
1	2 16 9.00	2.2197	14 15 16.4	14.558
2	2 18 22.29	2.2234	14 29 47.4	14.473
3	2 20 35.81	2.2272	14 44 13.2	14.387
4	2 22 49.56	2.2311	14 58 33.9	14.300
5	2 25 3.55	2.2351	15 12 49.3	14.211
6	2 27 17.77	2.2390	15 26 59.3	14.121
7	2 29 32.23	2.2431	15 41 3.9	14.030
8	2 31 46.94	2.2473	15 55 2.9	13.937
9	2 34 1.91	2.2515	16 8 56.3	13.843
10	2 36 17.13	2.2556	16 22 44.0	13.746
11	2 38 32.59	2.2597	16 36 25.8	13.648
12	2 40 48.30	2.2640	16 50 1.8	13.550
13	2 43 4.27	2.2684	17 3 31.8	13.450
14	2 45 20.51	2.2728	17 16 55.8	13.348
15	2 47 37.01	2.2772	17 30 13.6	13.245
16	2 49 53.77	2.2816	17 43 25.1	13.140
17	2 52 10.80	2.2862	17 56 30.3	13.034
18	2 54 28.11	2.2908	18 9 29.2	12.927
19	2 56 45.69	2.2952	18 22 21.6	12.818
20	2 59 3.53	2.2996	18 35 7.4	12.707
21	3 1 21.64	2.3042	18 47 46.5	12.595
22	3 3 40.03	2.3088	19 0 18.9	12.483
23	3 5 58.70	2.3134	19 12 44.5	12.368
24	3 8 17.64	2.3180	N.19 25 3.1	12.251

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	WEDNESDAY 5.							
	h	m	s	s	°	′	″	″
0	3	8	17.64	2.3180	N.19	25	3.1	12.251
1	3	10	36.86	2.3227	19	37	14.7	12.134
2	3	12	56.36	2.3273	19	49	19.2	12.016
3	3	15	16.14	2.3320	20	1	16.6	11.896
4	3	17	36.20	2.3367	20	13	6.7	11.774
5	3	19	56.54	2.3414	20	24	49.5	11.652
6	3	22	17.17	2.3461	20	36	24.9	11.528
7	3	24	38.07	2.3508	20	47	52.8	11.402
8	3	26	59.26	2.3555	20	59	13.2	11.275
9	3	29	20.73	2.3602	21	10	25.9	11.147
10	3	31	42.48	2.3648	21	21	30.9	11.017
11	3	34	4.51	2.3694	21	32	28.1	10.886
12	3	36	26.81	2.3741	21	43	17.4	10.754
13	3	38	49.40	2.3787	21	53	58.7	10.622
14	3	41	12.26	2.3833	22	4	32.0	10.488
15	3	43	35.40	2.3880	22	14	57.2	10.352
16	3	45	58.82	2.3926	22	25	14.2	10.214
17	3	48	22.51	2.3972	22	35	22.9	10.075
18	3	50	46.48	2.4017	22	45	23.2	9.936
19	3	53	10.72	2.4062	22	55	15.2	9.796
20	3	55	35.22	2.4106	23	4	58.7	9.654
21	3	57	59.99	2.4151	23	14	33.6	9.511
22	4	0	25.03	2.4195	23	23	59.9	9.367
23	4	2	50.33	2.4238	N.23	33	17.5	9.221
	THURSDAY 6.							
0	4	5	15.89	2.4282	N.23	42	26.3	9.074
1	4	7	41.71	2.4324	23	51	26.3	8.927
2	4	10	7.78	2.4366	24	0	17.5	8.779
3	4	12	34.11	2.4408	24	8	59.7	8.628
4	4	15	0.68	2.4449	24	17	32.8	8.476
5	4	17	27.50	2.4490	24	25	56.8	8.323
6	4	19	54.56	2.4530	24	34	11.6	8.170
7	4	22	21.86	2.4569	24	42	17.2	8.016
8	4	24	49.39	2.4607	24	50	13.5	7.861
9	4	27	17.15	2.4645	24	58	0.5	7.705
10	4	29	45.13	2.4683	25	5	38.1	7.548
11	4	32	13.34	2.4720	25	13	6.2	7.390
12	4	34	41.77	2.4756	25	20	24.8	7.232
13	4	37	10.41	2.4790	25	27	33.9	7.072
14	4	39	39.25	2.4824	25	34	33.4	6.911
15	4	42	8.30	2.4857	25	41	23.2	6.749
16	4	44	37.54	2.4889	25	48	3.2	6.586
17	4	47	6.97	2.4921	25	54	33.5	6.423
18	4	49	36.59	2.4952	26	0	54.0	6.259
19	4	52	6.39	2.4981	26	7	4.6	6.094
20	4	54	36.36	2.5009	26	13	5.3	5.928
21	4	57	6.50	2.5036	26	18	56.0	5.761
22	4	59	36.79	2.5063	26	24	36.7	5.594
23	5	2	7.25	2.5090	26	30	7.4	5.427
24	5	4	37.87	2.5116	N.26	35	28.1	5.259

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	FRIDAY 7.							
	h	m	s	s	°	′	″	″
0	5	4	37.87	2.5116	N.26	35	28.1	5.259
1	5	7	8.63	2.5139	26	40	38.6	5.091
2	5	9	39.52	2.5160	26	45	39.0	4.922
3	5	12	10.54	2.5181	26	50	29.2	4.752
4	5	14	41.68	2.5201	26	55	9.2	4.581
5	5	17	12.94	2.5220	26	59	38.9	4.410
6	5	19	44.31	2.5237	27	3	58.4	4.239
7	5	22	15.78	2.5253	27	8	7.6	4.067
8	5	24	47.35	2.5268	27	12	6.4	3.895
9	5	27	19.00	2.5281	27	15	54.9	3.723
10	5	29	50.73	2.5294	27	19	33.1	3.550
11	5	32	22.53	2.5306	27	23	0.8	3.376
12	5	34	54.40	2.5316	27	26	18.1	3.202
13	5	37	26.32	2.5324	27	29	25.0	3.028
14	5	39	58.29	2.5332	27	32	21.4	2.854
15	5	42	30.30	2.5338	27	35	7.4	2.680
16	5	45	2.34	2.5343	27	37	42.9	2.505
17	5	47	34.41	2.5347	27	40	7.9	2.331
18	5	50	6.50	2.5349	27	42	22.5	2.156
19	5	52	38.60	2.5349	27	44	26.6	1.981
20	5	55	10.69	2.5347	27	46	20.2	1.806
21	5	57	42.77	2.5345	27	48	3.3	1.631
22	6	0	14.84	2.5343	27	49	35.9	1.456
23	6	2	46.89	2.5338	N.27	50	58.0	1.282
	SATURDAY 8.							
0	6	5	18.90	2.5331	N.27	52	9.7	1.107
1	6	7	50.87	2.5324	27	53	10.9	0.931
2	6	10	22.79	2.5316	27	54	1.6	0.756
3	6	12	54.66	2.5306	27	54	41.9	0.581
4	6	15	26.46	2.5294	27	55	11.8	0.407
5	6	17	58.19	2.5281	27	55	31.2	0.234
6	6	20	29.83	2.5266	27	55	40.2	+0.062
7	6	23	1.38	2.5250	27	55	38.8	−0.110
8	6	25	32.83	2.5232	27	55	27.1	0.282
9	6	28	4.17	2.5213	27	55	5.0	0.455
10	6	30	35.39	2.5193	27	54	32.5	0.627
11	6	33	6.49	2.5171	27	53	49.8	0.798
12	6	35	37.45	2.5148	27	52	56.8	0.969
13	6	38	8.27	2.5125	27	51	53.5	1.139
14	6	40	38.95	2.5101	27	50	40.1	1.308
15	6	43	9.48	2.5074	27	49	16.5	1.478
16	6	45	39.84	2.5046	27	47	42.7	1.647
17	6	48	10.03	2.5016	27	45	58.8	1.815
18	6	50	40.03	2.4985	27	44	4.8	1.983
19	6	53	9.85	2.4953	27	42	0.8	2.150
20	6	55	39.47	2.4920	27	39	46.8	2.317
21	6	58	8.89	2.4886	27	37	22.8	2.483
22	7	0	38.10	2.4851	27	34	48.9	2.648
23	7	3	7.10	2.4814	27	32	5.1	2.812
24	7	5	35.87	2.4775	N.27	29	11.5	2.975

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 9.					TUESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 5 35.87	2.4775	N.27 29 11.5	2.975	0	8 58 28.23	2.2031	N.22 18 9.2	9.513
1	7 8 4.40	2.4736	27 26 8.1	3.137	1	9 0 40.23	2.1967	22 8 35.3	9.617
2	7 10 32.70	2.4697	27 22 55.0	3.299	2	9 2 51.83	2.1901	21 58 55.2	9.720
3	7 13 0.76	2.4656	27 19 32.2	3.461	3	9 5 3.04	2.1835	21 49 8.9	9.822
4	7 15 28.57	2.4613	27 15 59.7	3.621	4	9 7 13.85	2.1768	21 39 16.5	9.922
5	7 17 56.12	2.4569	27 12 17.7	3.779	5	9 9 24.26	2.1702	21 29 18.2	10.021
6	7 20 23.40	2.4524	27 8 26.2	3.936	6	9 11 34.28	2.1637	21 19 14.0	10.119
7	7 22 50.41	2.4479	27 4 25.3	4.093	7	9 13 43.91	2.1573	21 9 3.9	10.215
8	7 25 17.15	2.4433	27 0 15.0	4.250	8	9 15 53.15	2.1507	20 58 48.2	10.309
9	7 27 43.61	2.4386	26 55 55.3	4.406	9	9 18 1.99	2.1441	20 48 26.8	10.403
10	7 30 9.78	2.4337	26 51 26.3	4.560	10	9 20 10.44	2.1376	20 37 59.8	10.495
11	7 32 35.65	2.4288	26 46 48.1	4.713	11	9 22 18.50	2.1312	20 27 27.4	10.585
12	7 35 1.23	2.4238	26 42 0.7	4.865	12	9 24 26.18	2.1248	20 16 49.6	10.675
13	7 37 26.50	2.4186	26 37 4.3	5.015	13	9 26 33.47	2.1183	20 6 6.4	10.763
14	7 39 51.46	2.4133	26 31 58.9	5.165	14	9 28 40.38	2.1119	19 55 18.0	10.849
15	7 42 16.10	2.4080	26 26 44.5	5.314	15	9 30 46.90	2.1055	19 44 24.5	10.934
16	7 44 40.42	2.4027	26 21 21.2	5.461	16	9 32 53.04	2.0992	19 33 25.9	11.019
17	7 47 4.42	2.3973	26 15 49.1	5.607	17	9 34 58.80	2.0929	19 22 22.3	11.102
18	7 49 28.09	2.3918	26 10 8.3	5.752	18	9 37 4.19	2.0866	19 11 13.8	11.183
19	7 51 51.43	2.3861	26 4 18.8	5.897	19	9 39 9.20	2.0803	19 0 0.4	11.262
20	7 54 14.42	2.3803	25 58 20.6	6.040	20	9 41 13.83	2.0741	18 48 42.3	11.341
21	7 56 37.07	2.3746	25 52 13.9	6.181	21	9 43 18.09	2.0679	18 37 19.5	11.419
22	7 58 59.38	2.3688	25 45 58.8	6.322	22	9 45 21.98	2.0617	18 25 52.1	11.495
23	8 1 21.33	2.3629	N.25 39 35.3	6.462	23	9 47 25.50	2.0556	N.18 14 20.2	11.569
	MONDAY 10.					WEDNESDAY 12.			
0	8 3 42.93	2.3570	N.25 33 3.4	6.600	0	9 49 28.66	2.0496	N.18 2 43.9	11.642
1	8 6 4.17	2.3510	25 26 23.3	6.736	1	9 51 31.45	2.0436	17 51 3.2	11.714
2	8 8 25.05	2.3450	25 19 35.1	6.871	2	9 53 33.89	2.0377	17 39 18.2	11.786
3	8 10 45.57	2.3389	25 12 38.8	7.005	3	9 55 35.97	2.0318	17 27 28.9	11.856
4	8 13 5.72	2.3327	25 5 34.5	7.138	4	9 57 37.70	2.0258	17 15 35.5	11.924
5	8 15 25.50	2.3265	24 58 22.2	7.270	5	9 59 39,07	2.0199	17 3 38.1	11.990
6	8 17 44.91	2.3203	24 51 2.1	7.400	6	10 1 40.09	2.0142	16 51 36.7	12.056
7	8 20 3.94	2.3140	24 43 34.2	7.529	7	10 3 40.77	2.0085	16 39 31.4	12.121
8	8 22 22.59	2.3077	24 35 58.6	7.657	8	10 5 41.11	2.0028	16 27 22.2	12.185
9	8 24 40.86	2.3014	24 28 15.4	7.783	9	10 7 41.10	1.9971	16 15 9.2	12.247
10	8 26 58.75	2.2951	24 20 24.7	7.908	10	10 9 40.76	1.9915	16 2 52.5	12.307
11	8 29 16.26	2.2887	24 12 26.5	8.031	11	10 11 40.08	1.9859	15 50 32.3	12.366
12	8 31 33.38	2.2823	24 4 21.0	8.153	12	10 13 39.07	1.9805	15 38 8.5	12.425
13	8 33 50.12	2.2757	23 56 8.2	8.273	13	10 15 37.74	1.9751	15 25 41.2	12.483
14	8 36 6.46	2.2691	23 47 48.2	8.393	14	10 17 36.08	1.9697	15 13 10.5	12.539
15	8 38 22.41	2.2626	23 39 21.0	8.511	15	10 19 34.10	1.9644	15 0 36.5	12.594
16	8 40 37.97	2.2561	23 30 46.8	8.628	16	10 21 31.81	1.9592	14 47 59.2	12.648
17	8 42 53.14	2.2495	23 22 5.6	8.744	17	10 23 29.20	1.9539	14 35 18.7	12.702
18	8 45 7.91	2.2429	23 13 17.5	8.858	18	10 25 26.28	1.9488	14 22 35.0	12.754
19	8 47 22.29	2.2363	23 4 22.6	8.971	19	10 27 23.05	1.9437	14 9 48.2	12.804
20	8 49 36.27	2.2297	22 55 21.0	9.082	20	10 29 19.52	1.9387	13 56 58.5	12.852
21	8 51 49.86	2.2231	22 46 12.8	9.191	21	10 31 15.69	1.9338	13 44 6.0	12.899
22	8 54 3.05	2.2164	22 36 58.0	9.300	22	10 33 11.57	1.9288	13 31 10.5	12.947
23	8 56 15.84	2.2097	22 27 36.8	9.407	23	10 35 7.15	1.9239	13 18 12.3	12.994
24	8 58 28.23	2.2031	N.22 18 9.2	9.513	24	10 37 2.44	1.9191	N.13 5 11.3	13.039

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 13.					SATURDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 37 2.44	1.9191	N.13 5 11.3	13.039	0	12 4 55.10	1.7692	N. 2 6 32.9	14.057
1	10 38 57.44	1.9144	12 52 7.6	13.083	1	12 6 41.20	1.7678	1 52 29.5	14.057
2	10 40 52.17	1.9098	12 39 1.4	13.126	2	12 8 27.23	1.7665	1 38 26.1	14.058
3	10 42 46.62	1.9052	12 25 52.6	13.168	3	12 10 13.18	1.7653	1 24 22.6	14.057
4	10 44 40.79	1.9007	12 12 41.3	13.208	4	12 11 59.06	1.7641	1 10 19.2	14.055
5	10 46 34.70	1.8963	11 59 27.7	13.247	5	12 13 44.87	1.7629	0 56 16.0	14.052
6	10 48 28.34	1.8918	11 46 11.7	13.286	6	12 15 30.61	1.7618	0 42 13.0	14.049
7	10 50 21.72	1.8875	11 32 53.4	13.323	7	12 17 16.29	1.7609	0 28 10.2	14.045
8	10 52 14.84	1.8832	11 19 32.9	13.359	8	12 19 1.92	1.7601	0 14 7.6	14.041
9	10 54 7.70	1.8789	11 6 10.3	13.394	9	12 20 47.50	1.7593	N. 0 0 5.3	14.035
10	10 56 0.31	1.8748	10 52 45.6	13.429	10	12 22 33.03	1.7585	S. 0 13 56.6	14.028
11	10 57 52.68	1.8708	10 39 18.9	13.463	11	12 24 18.52	1.7578	0 27 58.1	14.021
12	10 59 44.81	1.8669	10 25 50.1	13.496	12	12 26 3.97	1.7572	0 41 59.1	14.013
13	11 1 36.71	1.8629	10 12 19.4	13.527	13	12 27 49.38	1.7567	0 55 59.6	14.005
14	11 3 28.36	1.8588	9 58 46.9	13.556	14	12 29 34.77	1.7563	1 9 59.7	13.996
15	11 5 19.77	1.8550	9 45 12.7	13.584	15	12 31 20.13	1.7558	1 23 59.3	13.986
16	11 7 10.96	1.8514	9 31 36.8	13.613	16	12 33 5.47	1.7555	1 37 58.2	13.975
17	11 9 1.94	1.8478	9 17 59.1	13.642	17	12 34 50.79	1.7553	1 51 56.4	13.964
18	11 10 52.70	1.8442	9 4 19.7	13.670	18	12 36 36.10	1.7551	2 5 53.9	13.952
19	11 12 43.24	1.8407	8 50 38.7	13.695	19	12 38 21.40	1.7550	2 19 50.7	13.940
20	11 14 33.58	1.8373	8 36 56.3	13.718	20	12 40 6.70	1.7550	2 33 46.7	13.926
21	11 16 23.71	1.8338	8 23 12.6	13.740	21	12 41 52.00	1.7550	2 47 41.9	13.912
22	11 18 13.64	1.8305	8 9 27.5	13.764	22	12 43 37.30	1.7551	3 1 36.2	13.897
23	11 20 3.37	1.8273	N. 7 55 40.9	13.788	23	12 45 22.61	1.7553	S. 3 15 29.6	13.882
	FRIDAY 14.					SUNDAY 16.			
0	11 21 52.91	1.8241	N. 7 41 52.9	13.810	0	12 47 7.94	1.7556	S. 3 29 22.2	13.867
1	11 23 42.26	1.8210	7 28 3.7	13.829	1	12 48 53.28	1.7559	3 43 13.7	13.850
2	11 25 31.43	1.8179	7 14 13.4	13.847	2	12 50 38.65	1.7564	3 57 4.2	13.832
3	11 27 20.41	1.8149	7 0 22.1	13.865	3	12 52 24.05	1.7569	4 10 53.6	13.814
4	11 29 9.22	1.8121	6 46 29.7	13.883	4	12 54 9.48	1.7575	4 24 41.9	13.795
5	11 30 57.86	1.8093	6 32 36.2	13.900	5	12 55 54.95	1.7581	4 38 29.1	13.776
6	11 32 46.33	1.8065	6 18 41.7	13.916	6	12 57 40.45	1.7587	4 52 15.1	13.756
7	11 34 34.64	1.8038	6 4 46.3	13.931	7	12 59 25.99	1.7595	5 5 59.8	13.735
8	11 36 22.79	1.8013	5 50 50.0	13.945	8	13 1 11.59	1.7604	5 19 43.3	13.714
9	11 38 10.79	1.7987	5 36 52.9	13.958	9	13 2 57.24	1.7613	5 33 25.5	13.692
10	11 39 58.63	1.7962	5 22 55.1	13.970	10	13 4 42.94	1.7623	5 47 6.3	13.669
11	11 41 46.33	1.7938	5 8 56.6	13.982	11	13 6 28.71	1.7633	6 0 45.7	13.645
12	11 43 33.89	1.7915	4 54 57.4	13.993	12	13 8 14.54	1.7644	6 14 23.7	13.621
13	11 45 21.31	1.7893	4 40 57.5	14.003	13	13 10 0.44	1.7656	6 28 0.2	13.596
14	11 47 8.60	1.7871	4 26 57.1	14.011	14	13 11 46.41	1.7668	6 41 35.2	13.570
15	11 48 55.76	1.7849	4 12 56.3	14.019	15	13 13 32.46	1.7682	6 55 8.6	13.543
16	11 50 42.79	1.7828	3 58 55.0	14.027	16	13 15 18.59	1.7696	7 8 40.4	13.516
17	11 52 29.70	1.7809	3 44 53.2	14.034	17	13 17 4.81	1.7710	7 22 10.6	13.489
18	11 54 16.50	1.7790	3 30 51.0	14.039	18	13 18 51.11	1.7725	7 35 39.2	13.461
19	11 56 3.18	1.7772	3 16 48.5	14.043	19	13 20 37.51	1.7742	7 49 6.0	13.432
20	11 57 49.76	1.7755	3 2 45.8	14.047	20	13 22 24.01	1.7759	8 2 31.0	13.403
21	11 59 36.24	1.7738	2 48 42.8	14.051	21	13 24 10.62	1.7777	8 15 54.3	13.373
22	12 1 22.62	1.7722	2 34 39.6	14.054	22	13 25 57.33	1.7795	8 29 15.7	13.341
23	12 3 8.90	1.7707	2 20 36.3	14.056	23	13 27 44.16	1.7814	8 42 35.2	13.309
24	12 4 55.10	1.7692	N. 2 6 32.9	14.057	24	13 29 31.10	1.7833	S. 8 55 52.7	13.276

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 17.					WEDNESDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 29 31.10	1.7833	S. 8 55 52.7	13.276	0	14 58 40.85	1.9566	S. 18 41 40.7	10.829
1	13 31 18.16	1.7854	9 9 8.3	13.243	1	15 0 38.40	1.9617	18 52 28.3	10.757
2	13 33 5.35	1.7875	9 22 21.9	13.209	2	15 2 36.26	1.9668	19 3 11.6	10.685
3	13 34 52.66	1.7897	9 35 33.4	13.174	3	15 4 34.42	1.9720	19 13 50.5	10.612
4	13 36 40.11	1.7920	9 48 42.8	13.138	4	15 6 32.90	1.9773	19 24 25.0	10.538
5	13 38 27.70	1.7943	10 1 50.0	13.102	5	15 8 31.70	1.9827	19 34 55.0	10.463
6	13 40 15.42	1.7966	10 14 55.1	13.065	6	15 10 30.82	1.9880	19 45 20.5	10.386
7	13 42 3.29	1.7991	10 27 57.9	13.028	7	15 12 30.26	1.9934	19 55 41.3	10.308
8	13 43 51.31	1.8016	10 40 58.5	12.990	8	15 14 30.03	1.9989	20 5 57.5	10.230
9	13 45 39.48	1.8042	10 53 56.8	12.951	9	15 16 30.13	2.0044	20 16 9.0	10.151
10	13 47 27.81	1.8069	11 6 52.7	12.911	10	15 18 30.56	2.0099	20 26 15.7	10.071
11	13 49 16.31	1.8097	11 19 46.2	12.871	11	15 20 31.32	2.0154	20 36 17.6	9.991
12	13 51 4.97	1.8124	11 32 37.3	12.830	12	15 22 32.41	2.0210	20 46 14.6	9.909
13	13 52 53.80	1.8153	11 45 25.9	12.788	13	15 24 33.84	2.0268	20 56 6.7	9.826
14	13 54 42.81	1.8183	11 58 11.9	12.745	14	15 26 35.62	2.0325	21 5 53.7	9.741
15	13 56 31.99	1.8213	12 10 55.3	12.702	15	15 28 37.74	2.0383	21 15 35.6	9.656
16	13 58 21.36	1.8243	12 23 36.1	12.658	16	15 30 40.21	2.0441	21 25 12.4	9.570
17	14 0 10.91	1.8274	12 36 14.3	12.614	17	15 32 43.03	2.0498	21 34 44.0	9.482
18	14 2 0.65	1.8306	12 48 49.8	12.568	18	15 34 46.19	2.0557	21 44 10.3	9.394
19	14 3 50.58	1.8339	13 1 22.5	12.522	19	15 36 49.71	2.0616	21 53 31.3	9.305
20	14 5 40.72	1.8373	13 13 52.4	12.475	20	15 38 53.58	2.0675	22 2 46.9	9.215
21	14 7 31.06	1.8407	13 26 19.5	12.427	21	15 40 57.81	2.0735	22 11 57.1	9.124
22	14 9 21.60	1.8442	13 38 43.7	12.379	22	15 43 2.40	2.0795	22 21 1.8	9.031
23	14 11 12.36	1.8478	S. 13 51 5.0	12.330	23	15 45 7.35	2.0855	S. 22 30 0.8	8.937
	TUESDAY 18.					THURSDAY 20.			
0	14 13 3.33	1.8513	S. 14 3 23.3	12.280	0	15 47 12.66	2.0915	S. 22 38 54.2	8.842
1	14 14 54.52	1.8550	14 15 38.6	12.229	1	15 49 18.33	2.0976	22 47 41.8	8.746
2	14 16 45.93	1.8587	14 27 50.8	12.177	2	15 51 24.37	2.1038	22 56 23.7	8.650
3	14 18 37.56	1.8625	14 39 59.8	12.124	3	15 53 30.78	2.1098	23 4 59.8	8.552
4	14 20 29.43	1.8664	14 52 5.7	12.071	4	15 55 37.55	2.1159	23 13 30.0	8.453
5	14 22 21.53	1.8703	15 4 8.4	12.017	5	15 57 44.69	2.1221	23 21 54.2	8.353
6	14 24 13.87	1.8743	15 16 7.8	11.962	6	15 59 52.20	2.1282	23 30 12.4	8.252
7	14 26 6.45	1.8784	15 28 3.9	11.907	7	16 2 0.08	2.1344	23 38 24.5	8.150
8	14 27 59.28	1.8825	15 39 56.7	11.851	8	16 4 8.33	2.1407	23 46 30.4	8.046
9	14 29 52.35	1.8867	15 51 46.0	11.793	9	16 6 16.96	2.1469	23 54 30.1	7.942
10	14 31 45.68	1.8910	16 3 31.8	11.734	10	16 8 25.96	2.1531	24 2 23.5	7.836
11	14 33 39.27	1.8953	16 15 14.1	11.675	11	16 10 35.33	2.1593	24 10 10.5	7.729
12	14 35 33.11	1.8996	16 26 52.9	11.615	12	16 12 45.08	2.1656	24 17 51.1	7.622
13	14 37 27.22	1.9040	16 38 28.0	11.554	13	16 14 55.20	2.1718	24 25 25.2	7.513
14	14 39 21.59	1.9085	16 49 59.4	11.493	14	16 17 5.70	2.1781	24 32 52.7	7.402
15	14 41 16.24	1.9132	17 1 27.2	11.431	15	16 19 16.57	2.1843	24 40 13.5	7.291
16	14 43 11.17	1.9177	17 12 51.2	11.367	16	16 21 27.82	2.1906	24 47 27.6	7.179
17	14 45 6.37	1.9223	17 24 11.3	11.303	17	16 23 39.44	2.1968	24 54 35.0	7.066
18	14 47 1.85	1.9271	17 35 27.6	11.239	18	16 25 51.43	2.2030	25 1 35.6	6.952
19	14 48 57.62	1.9319	17 46 40.0	11.173	19	16 28 3.80	2.2093	25 8 29.3	6.836
20	14 50 53.68	1.9368	17 57 48.3	11.106	20	16 30 16.54	2.2155	25 15 15.9	6.718
21	14 52 50.03	1.9416	18 8 52.6	11.038	21	16 32 29.66	2.2218	25 21 55.4	6.599
22	14 54 46.67	1.9465	18 19 52.8	10.969	22	16 34 43.15	2.2279	25 28 27.8	6.480
23	14 56 43.61	1.9515	18 30 48.8	10.899	23	16 36 57.01	2.2342	25 34 53.0	6.360
24	14 58 40.85	1.9566	S. 18 41 40.7	10.829	24	16 39 11.25	2.2403	S. 25 41 11.0	6.238

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 39 11.25	2.2403	S.25 41 11.0	6.238
1	16 41 25.85	2.2464	25 47 21.6	6.115
2	16 43 40.82	2.2526	25 53 24.8	5.991
3	16 45 56.16	2.2587	25 59 20.6	5.867
4	16 48 11.86	2.2648	26 5 8.9	5.741
5	16 50 27.93	2.2708	26 10 49.5	5.613
6	16 52 44.36	2.2768	26 16 22.4	5.484
7	16 55 1.15	2.2828	26 21 47.5	5.354
8	16 57 18.29	2.2887	26 27 4.9	5.224
9	16 59 35.79	2.2947	26 32 14.5	5.092
10	17 1 53.65	2.3005	26 37 16.1	4.958
11	17 4 11.85	2.3063	26 42 9.6	4.824
12	17 6 30.40	2.3121	26 46 55.1	4.690
13	17 8 49.30	2.3178	26 51 32.5	4.555
14	17 11 8.54	2.3235	26 56 1.7	4.418
15	17 13 28.12	2.3292	27 0 22.6	4.279
16	17 15 48.04	2.3348	27 4 35.2	4.139
17	17 18 8.29	2.3402	27 8 39.3	3.998
18	17 20 28.86	2.3456	27 12 35.0	3.857
19	17 22 49.76	2.3510	27 16 22.2	3.715
20	17 25 10.98	2.3564	27 20 0.8	3.571
21	17 27 32.53	2.3617	27 23 30.7	3.426
22	17 29 54.39	2.3669	27 26 51.9	3.280
23	17 32 16.56	2.3720	S.27 30 4.3	3.134

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 34 39.03	2.3771	S.27 33 8.0	2.986
1	17 37 1.81	2.3821	27 36 2.7	2.837
2	17 39 24.88	2.3869	27 38 48.5	2.688
3	17 41 48.24	2.3918	27 41 25.3	2.537
4	17 44 11.90	2.3966	27 43 53.0	2.385
5	17 46 35.83	2.4012	27 46 11.6	2.233
6	17 49 0.04	2.4058	27 48 21.0	2.080
7	17 51 24.52	2.4103	27 50 21.2	1.925
8	17 53 49.27	2.4147	27 52 12.0	1.769
9	17 56 14.28	2.4189	27 53 53.5	1.613
10	17 58 39.54	2.4231	27 55 25.6	1.456
11	18 1 5.05	2.4272	27 56 48.3	1.299
12	18 3 30.80	2.4312	27 58 1.5	1.141
13	18 5 56.79	2.4350	27 59 5.2	0.982
14	18 8 23.00	2.4388	27 59 59.3	0.821
15	18 10 49.44	2.4425	28 0 43.7	0.660
16	18 13 16.10	2.4461	28 1 18.4	0.498
17	18 15 42.97	2.4495	28 1 43.4	0.336
18	18 18 10.04	2.4529	28 1 58.7	0.173
19	18 20 37.32	2.4562	28 2 4.2	−0.009
20	18 23 4.78	2.4593	28 1 59.8	+0.156
21	18 25 32.43	2.4624	28 1 45.5	0.321
22	18 28 0.27	2.4653	28 1 21.3	0.486
23	18 30 28.27	2.4681	28 0 47.2	0.652
24	18 32 56.44	2.4708	S.28 0 3.1	0.819

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 32 56.44	2.4708	S.28 0 3.1	0.819
1	18 35 24.77	2.4734	27 59 9.0	0.986
2	18 37 53.25	2.4759	27 58 4.8	1.153
3	18 40 21.88	2.4783	27 56 50.6	1.321
4	18 42 50.65	2.4805	27 55 26.3	1.490
5	18 45 19.54	2.4826	27 53 51.8	1.660
6	18 47 48.56	2.4846	27 52 7.1	1.830
7	18 50 17.70	2.4865	27 50 12.2	1.999
8	18 52 46.94	2.4882	27 48 7.2	2.168
9	18 55 16.28	2.4898	27 45 52.1	2.338
10	18 57 45.71	2.4913	27 43 26.7	2.510
11	19 0 15.23	2.4928	27 40 51.0	2.682
12	19 2 44.84	2.4941	27 38 4.9	2.854
13	19 5 14.52	2.4951	27 35 8.5	3.025
14	19 7 44.25	2.4959	27 32 1.9	3.196
15	19 10 14.03	2.4968	27 28 45.1	3.367
16	19 12 43.86	2.4976	27 25 18.0	3.539
17	19 15 13.74	2.4983	27 21 40.5	3.713
18	19 17 43.66	2.4989	27 17 52.5	3.886
19	19 20 13.61	2.4992	27 13 54.2	4.057
20	19 22 43.57	2.4993	27 9 45.7	4.228
21	19 25 13.53	2.4994	27 5 27.0	4.399
22	19 27 43.50	2.4995	27 0 57.9	4.571
23	19 30 13.47	2.4995	S.26 56 18.5	4.744

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 32 43.44	2.4993	S.26 51 28.7	4.916
1	19 35 13.39	2.4989	26 46 28.6	5.087
2	19 37 43.31	2.4984	26 41 18.3	5.258
3	19 40 13.20	2.4978	26 35 57.7	5.429
4	19 42 43.05	2.4972	26 30 26.8	5.600
5	19 45 12.86	2.4964	26 24 45.7	5.770
6	19 47 42.62	2.4955	26 18 54.4	5.940
7	19 50 12.32	2.4944	26 12 52.9	6.110
8	19 52 41.95	2.4933	26 6 41.2	6.280
9	19 55 11.52	2.4922	26 0 19.3	6.450
10	19 57 41.01	2.4908	25 53 47.2	6.619
11	20 0 10.41	2.4892	25 47 5.1	6.787
12	20 2 39.71	2.4876	25 40 12.9	6.955
13	20 5 8.92	2.4860	25 33 10.6	7.122
14	20 7 38.03	2.4843	25 25 58.3	7.288
15	20 10 7.04	2.4826	25 18 36.1	7.454
16	20 12 35.94	2.4806	25 11 3.8	7.620
17	20 15 4.71	2.4783	25 3 21.7	7.784
18	20 17 33.34	2.4762	24 55 29.8	7.948
19	20 20 1.85	2.4741	24 47 28.0	8.112
20	20 22 30.23	2.4718	24 39 16.4	8.275
21	20 24 58.47	2.4694	24 30 55.1	8.437
22	20 27 26.56	2.4669	24 22 24.1	8.598
23	20 29 54.50	2.4643	24 13 43.4	8.759
24	20 32 22.28	2.4617	S.24 4 53.1	8.918

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 25.					THURSDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 32 22.28	2.4617	S. 24 4 53.1	8.918	0	22 26 35.82	2.2912	S. 14 14 51.8	15.131
1	20 34 49.90	2.4590	23 55 53.3	9.076	1	22 28 53.18	2.2876	13 59 41.2	15.223
2	20 37 17.36	2.4563	23 46 44.0	9.234	2	22 31 10.33	2.2841	13 44 25.1	15.313
3	20 39 44.65	2.4534	23 37 25.2	9.391	3	22 33 27.27	2.2806	13 29 3.7	15.401
4	20 42 11.77	2.4505	23 27 57.0	9.546	4	22 35 44.00	2.2772	13 13 37.0	15.488
5	20 44 38.71	2.4474	23 18 19.6	9.701	5	22 38 0.53	2.2739	12 58 5.1	15.574
6	20 47 5.46	2.4443	23 8 32.9	9.855	6	22 40 16.87	2.2707	12 42 28.1	15.657
7	20 49 32.02	2.4412	22 58 37.0	10.008	7	22 42 33.01	2.2673	12 26 46.3	15.738
8	20 51 58.40	2.4382	22 48 32.0	10.160	8	22 44 48.95	2.2641	12 10 59.6	15.818
9	20 54 24.60	2.4350	22 38 17.8	10.311	9	22 47 4.70	2.2609	11 55 8.2	15.896
10	20 56 50.60	2.4316	22 27 54.7	10.460	10	22 49 20.26	2.2578	11 39 12.2	15.972
11	20 59 16.39	2.4282	22 17 22.6	10.609	11	22 51 35.64	2.2548	11 23 11.7	16.045
12	21 1 41.98	2.4248	22 6 41.6	10.756	12	22 53 50.83	2.2517	11 7 6.8	16.117
13	21 4 7.37	2.4214	21 55 51.9	10.902	13	22 56 5.84	2.2487	10 50 57.6	16.188
14	21 6 32.55	2.4179	21 44 53.4	11.048	14	22 58 20.68	2.2458	10 34 44.2	16.256
15	21 8 57.52	2.4144	21 33 46.2	11.192	15	23 0 35.34	2.2429	10 18 26.8	16.323
16	21 11 22.28	2.4108	21 22 30.4	11.336	16	23 2 49.83	2.2402	10 2 5.4	16.388
17	21 13 46.82	2.4073	21 11 6.1	11.475	17	23 5 4.16	2.2375	9 45 40.2	16.451
18	21 16 11.15	2.4037	20 59 33.4	11.615	18	23 7 18.33	2.2348	9 29 11.2	16.513
19	21 18 35.26	2.4000	20 47 52.3	11.753	19	23 9 32.34	2.2322	9 12 38.6	16.573
20	21 20 59.15	2.3963	20 36 3.0	11.891	20	23 11 46.19	2.2296	8 56 2.5	16.631
21	21 23 22.81	2.3925	20 24 5.4	12.027	21	23 13 59.89	2.2271	8 39 22.9	16.687
22	21 25 46.25	2.3888	20 11 59.7	12.162	22	23 16 13.44	2.2247	8 22 40.1	16.741
23	21 28 9.47	2.3851	S. 19 59 46.0	12.295	23	23 18 26.85	2.2223	S. 8 5 54.1	16.793
	WEDNESDAY 26.					FRIDAY 28.			
0	21 30 32.46	2.3813	S. 19 47 24.3	12.427	0	23 20 40.11	2.2198	S. 7 49 5.0	16.843
1	21 32 55.22	2.3775	19 34 54.7	12.557	1	23 22 53.23	2.2177	7 32 13.0	16.891
2	21 35 17.76	2.3738	19 22 17.4	12.686	2	23 25 6.23	2.2156	7 15 18.1	16.937
3	21 37 40.07	2.3699	19 9 32.4	12.814	3	23 27 19.10	2.2135	6 58 20.5	16.982
4	21 40 2.15	2.3661	18 56 39.7	12.941	4	23 29 31.85	2.2115	6 41 20.3	17.025
5	21 42 24.00	2.3622	18 43 39.5	13.065	5	23 31 44.48	2.2094	6 24 17.6	17.066
6	21 44 45.61	2.3583	18 30 31.9	13.188	6	23 33 56.98	2.2074	6 7 12.4	17.105
7	21 47 6.99	2.3545	18 17 16.9	13.310	7	23 36 9.37	2.2057	5 50 5.0	17.142
8	21 49 28.15	2.3508	18 3 54.7	13.430	8	23 38 21.66	2.2040	5 32 55.4	17.177
9	21 51 49.08	2.3469	17 50 25.4	13.548	9	23 40 33.85	2.2023	5 15 43.8	17.210
10	21 54 9.78	2.3431	17 36 49.0	13.664	10	23 42 45.94	2.2007	4 58 30.2	17.242
11	21 56 30.25	2.3393	17 23 5.7	13.780	11	23 44 57.93	2.1991	4 41 14.8	17.271
12	21 58 50.49	2.3354	17 9 15.4	13.895	12	23 47 9.83	2.1976	4 23 57.7	17.298
13	22 1 10.50	2.3316	16 55 18.3	14.007	13	23 49 21.64	2.1963	4 6 39.0	17.324
14	22 3 30.28	2.3278	16 41 14.6	14.117	14	23 51 33.38	2.1950	3 49 18.8	17.348
15	22 5 49.84	2.3241	16 27 4.3	14.225	15	23 53 45.04	2.1938	3 31 57.2	17.370
16	22 8 9.17	2.3203	16 12 47.5	14.332	16	23 55 56.63	2.1926	3 14 34.3	17.390
17	22 10 28.27	2.3165	15 58 24.4	14.438	17	23 58 8.15	2.1914	2 57 10.3	17.408
18	25 12 47.15	2.3128	15 43 54.9	14.543	18	0 0 19.60	2.1903	2 39 45.2	17.425
19	22 15 5.81	2.3092	15 29 19.2	14.645	19	0 2 30.99	2.1895	2 22 19.2	17.440
20	22 17 24.25	2.3054	15 14 37.5	14.745	20	0 4 42.34	2.1888	2 4 52.4	17.453
21	22 19 42.46	2.3017	14 59 49.8	14.843	21	0 6 53.64	2.1880	1 47 24.9	17.464
22	22 22 0.45	2.2982	14 44 56.3	14.940	22	0 9 4.90	2.1873	1 29 56.8	17.473
23	22 24 18.24	2.2948	14 29 56.9	15.037	23	0 11 16.12	2.1867	1 12 28.2	17.480
24	22 26 35.82	2.2912	S. 14 14 51.8	15.131	24	0 13 27.30	2.1861	S. 0 54 59.2	17.485

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 13 27.30	2.1861	S. 0 54 59.2	17.485
1	0 15 38.45	2.1857	0 37 30.0	17.488
2	0 17 49.58	2.1853	0 20 0.6	17.489
3	0 20 0.69	2.1851	S. 0 2 31.2	17.488
4	0 22 11.79	2.1849	N. 0 14 58.1	17.486
5	0 24 22.88	2.1847	0 32 27.2	17.482
6	0 26 33.95	2.1845	0 49 56.0	17.476
7	0 28 45.02	2.1846	1 7 24.4	17.469
8	0 30 56.10	2.1848	1 24 52.3	17.460
9	0 33 7.20	2.1851	1 42 19.6	17.448
10	0 35 18.31	2.1853	1 59 46.1	17.435
11	0 37 29.43	2.1855	2 17 11.8	17.420
12	0 39 40.57	2.1859	2 34 36.5	17.402
13	0 41 51.74	2.1865	2 52 0.1	17.383
14	0 44 2.95	2.1871	3 9 22.5	17.363
15	0 46 14.19	2.1877	3 26 43.7	17.341
16	0 48 25.47	2.1885	3 44 3.5	17.316
17	0 50 36.81	2.1894	4 1 21.7	17.289
18	0 52 48.20	2.1903	4 18 38.3	17.262
19	0 54 59.65	2.1913	4 35 53.2	17.233
20	0 57 11.15	2.1923	4 53 6.3	17.201
21	0 59 22.72	2.1934	5 10 17.4	17.168
22	1 1 34.36	2.1947	5 27 26.5	17.133
23	1 3 46.08	2.1959	N. 5 44 33.4	17.096

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 5 57.87	2.1973	N. 6 1 38.0	17.057
1	1 8 9.75	2.1988	6 18 40.2	17.017
2	1 10 21.72	2.2003	6 35 40.0	16.975
3	1 12 33.79	2.2019	6 52 37.2	16.930
4	1 14 45.95	2.2036	7 9 31.6	16.884
5	1 16 58.22	2.2053	7 26 23.3	16.838
6	1 19 10.59	2.2072	7 43 12.2	16.789
7	1 21 23.08	2.2091	7 59 58.0	16.737
8	1 23 35.68	2.2110	8 16 40.7	16.684
9	1 25 48.40	2.2131	8 33 20.1	16.629
10	1 28 1.25	2.2153	8 49 56.2	16.573
11	1 30 14.23	2.2174	9 6 28.9	16.516
12	1 32 27.34	2.2197	9 22 58.1	16.456
13	1 34 40.59	2.2220	9 39 23.6	16.394
14	1 36 53.98	2.2244	9 55 45.4	16.331
15	1 39 7.52	2.2269	10 12 3.4	16.266
16	1 41 21.21	2.2294	10 28 17.4	16.199
17	1 43 35.05	2.2320	10 44 27.3	16.130
18	1 45 49.05	2.2347	11 0 33.1	16.060
19	1 48 3.21	2.2374	11 16 34.6	15.989
20	1 50 17.54	2.2402	11 32 31.8	15.916
21	1 52 32.03	2.2430	11 48 24.6	15.841
22	1 54 46.70	2.2460	12 4 12.8	15.765
23	1 57 1.55	2.2489	12 19 56.4	15.687
24	1 59 16.57	2.2519	N.12 35 35.2	15.606

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 59 16.57	2.2519	N.12 35 35.2	15.606
1	2 1 31.78	2.2551	12 51 9.1	15.524
2	2 3 47.18	2.2582	13 6 38.1	15.441
3	2 6 2.76	2.2614	13 22 2.1	15.356
4	2 8 18.54	2.2646	13 37 20.9	15.270
5	2 10 34.52	2.2679	13 52 34.5	15.182
6	2 12 50.69	2.2713	14 7 42.7	15.092
7	2 15 7.07	2.2747	14 22 45.5	15.001
8	2 17 23.65	2.2781	14 37 42.8	14.908
9	2 19 40.44	2.2817	14 52 34.4	14.813
10	2 21 57.45	2.2853	15 7 20.3	14.717
11	2 24 14.67	2.2888	15 22 0.4	14.619
12	2 26 32.10	2.2924	15 36 34.6	14.519
13	2 28 49.75	2.2961	15 51 2.7	14.418
14	2 31 7.63	2.2999	16 5 24.8	14.316
15	2 33 25.73	2.3036	16 19 40.7	14.212
16	2 35 44.06	2.3073	16 33 50.3	14.106
17	2 38 2.61	2.3111	16 47 53.5	14.000
18	2 40 21.39	2.3150	17 1 50.3	13.892
19	2 42 40.41	2.3189	17 15 40.5	13.782
20	2 44 59.66	2.3228	17 29 24.1	13.670
21	2 47 19.15	2.3267	17 43 0.9	13.557
22	2 49 38.87	2.3307	17 56 30.9	13.442
23	2 51 58.83	2.3347	N.18 9 54.0	13.326

TUESDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 54 19.03	2.3387	N.18 23 10.1	13.209

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, . .	4	10	47.1
● New Moon, . .	11	15	59.8
☽ First Quarter, . .	19	18	52.7
○ Full Moon, . . .	27	1	28.7

	d	h
☾ Perigee, ...	1	8.3
☾ Apogee, ...	17	1.1
☾ Perigee, ...	29	0.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Aquilæ	W.	60° 11′ 11″	3379	61° 33′ 51″	3340	62° 57′ 16″	3305	64° 21′ 22″	3272
	Saturn	W.	41 58 47	2209	43 47 1	2208	45 35 17	2207	47 23 34	2206
	Fomalhaut	W.	27 16 16	3248	28 41 28	3135	30 8 55	3040	31 38 18	2959
	α Arietis	E.	44 35 8	2333	42 49 57	2342	41 4 59	2353	39 20 17	2365
	Aldebaran	E.	74 44 21	2260	72 57 23	2262	71 10 27	2264	69 23 34	2266
	Sun	E.	135 49 58	2540	134 9 41	2538	132 29 21	2537	130 48 59	2537
2	α Aquilæ	W.	71 30 2	3158	72 57 1	3143	74 24 18	3131	75 51 50	3120
	Saturn	W.	56 24 51	2212	58 13 0	2214	60 1 6	2217	61 49 8	2220
	Fomalhaut	W.	39 26 8	2706	41 2 40	2675	42 39 53	2648	44 17 43	2625
	Aldebaran	E.	60 30 13	2285	58 43 51	2291	56 57 38	2296	55 11 33	2303
	Sun	E.	122 27 18	2542	120 47 3	2545	119 6 52	2547	117 26 44	2550
3	α Aquilæ	W.	83 12 3	3093	84 40 21	3094	86 8 38	3095	87 36 54	3098
	Saturn	W.	70 48 2	2239	72 35 31	2243	74 22 54	2248	76 10 10	2253
	Fomalhaut	W.	52 33 21	2552	54 13 22	2543	55 53 35	2536	57 33 58	2530
	α Pegasi	W.	35 42 1	3418	37 3 57	3329	38 27 35	3253	39 52 42	3186
	Aldebaran	E.	46 23 54	2346	44 39 2	2357	42 54 26	2369	41 10 7	2382
	Sun	E.	109 7 16	2570	107 27 40	2574	105 48 10	2580	104 8 47	2585
4	α Aquilæ	W.	94 56 42	3135	96 24 9	3147	97 51 22	3161	99 18 18	3176
	Saturn	W.	85 4 33	2281	86 51 0	2287	88 37 19	2292	90 23 30	2298
	Fomalhaut	W.	65 57 19	2519	67 38 6	2520	69 18 52	2520	70 59 37	2522
	α Pegasi	W.	47 15 14	2962	48 46 15	2931	50 17 54	2906	51 50 5	2883
	Aldebaran	E.	32 34 1	2475	30 52 12	2500	29 10 59	2530	27 30 27	2564
	Sun	E.	95 53 46	2614	94 15 10	2621	92 36 43	2627	90 58 25	2634
5	Saturn	W.	99 12 3	2331	100 57 17	2339	102 42 20	2346	104 27 13	2353
	Fomalhaut	W.	79 22 31	2539	81 2 50	2544	82 43 2	2549	84 23 7	2555
	α Pegasi	W.	59 37 1	2811	61 11 15	2801	62 45 41	2795	64 20 16	2789
	Sun	E.	82 49 13	2669	81 11 51	2676	79 34 39	2684	77 57 37	2692
6	Fomalhaut	W.	92 41 21	2590	94 20 30	2598	95 59 28	2607	97 38 14	2615
	α Pegasi	W.	72 14 31	2778	73 49 28	2779	75 24 24	2780	76 59 18	2782
	α Arietis	W.	28 41 47	2652	30 19 31	2635	31 57 38	2622	33 36 3	2611
	Sun	E.	69 55 4	2731	68 19 5	2739	66 43 17	2747	65 7 40	2755
7	α Pegasi	W.	84 52 47	2805	86 27 9	2810	88 1 24	2817	89 35 30	2825
	α Arietis	W.	41 50 47	2588	43 29 58	2588	45 9 9	2589	46 48 19	2591
	Sun	E.	57 12 21	2799	55 37 52	2808	54 3 34	2817	52 29 28	2826
8	α Pegasi	W.	97 23 16	2872	98 56 11	2883	100 28 52	2894	102 1 18	2907
	α Arietis	W.	55 3 21	2607	56 42 6	2612	58 20 45	2617	59 59 17	2623
	Aldebaran	W.	25 8 37	2789	26 43 19	2768	28 18 29	2751	29 54 1	2738
	Sun	E.	44 42 5	2876	43 9 15	2886	41 36 38	2897	40 4 15	2908
9	α Arietis	W.	68 9 55	2655	69 47 36	2661	71 25 8	2669	73 2 30	2677
	Aldebaran	W.	37 54 35	2715	39 30 55	2714	41 7 16	2715	42 43 36	2717
	Sun	E.	32 26 3	2970	30 55 13	2985	29 24 41	2999	27 54 27	3016
14	Sun	W.	26 56 15	3381	28 18 53	3385	29 41 27	[illegible]	31 3 58	3392
	Spica	E.	34 16 22	2968	32 45 29	2977	31 14 48	2987	29 44 19	2996
	Antares	E.	80 6 28	2954	78 35 18	2962	77 4 18	2970	75 33 28	2977
15	Sun	W.	37 55 20	3414	39 17 21	3418	40 39 17	3423	42 1 8	3427

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1	α Aquilæ	W.	65° 46′ 6″	3244	67° 11′ 23″	3219	68° 37′ 10″	3196	70° 3′ 24″	3176
	Saturn	W.	49 11 52	2207	51 0 9	2208	52 48 25	2209	54 36 39	2210
	Fomalhaut	W.	33 9 22	2891	34 41 52	2834	36 15 36	2785	37 50 24	2742
	α Arietis	E.	37 35 52	2380	35 51 48	2397	34 8 9	2417	32 24 58	2441
	Aldebaran	E.	67 36 44	2268	65 49 58	2272	64 3 17	2276	62 16 42	2280
	Sun	E.	129 8 37	2538	127 28 16	2538	125 47 55	2539	124 7 36	2540
2	α Aquilæ	W.	77 19 35	3111	78 47 31	3104	80 15 36	3099	81 43 47	3095
	Saturn	W.	63 37 5	2224	65 24 57	2227	67 12 44	2231	69 0 26	2235
	Fomalhaut	W.	45 56 4	2605	47 34 52	2588	49 14 3	2574	50 53 34	2562
	Aldebaran	E.	53 25 38	2311	51 39 54	2318	49 54 21	2327	48 9 1	2336
	Sun	E.	115 46 40	2553	114 6 41	2557	112 26 47	2561	110 46 58	2566
3	α Aquilæ	W.	89 5 6	3102	90 33 13	3109	92 1 12	3116	93 29 2	3124
	Saturn	W.	77 57 18	2258	79 44 19	2264	81 31 12	2269	83 17 57	2275
	Fomalhaut	W.	59 14 29	2526	60 55 6	2522	62 35 48	2520	64 16 33	2520
	α Pegasi	W.	41 19 8	3128	42 46 44	3077	44 15 22	3033	45 44 54	2994
	Aldebaran	E.	39 26 7	2397	37 42 28	2413	35 59 12	2431	34 16 22	2452
	Sun	E.	102 29 32	2591	100 50 24	2596	99 11 23	2601	97 32 30	2608
4	α Aquilæ	W.	100 44 56	3193	102 11 14	3210	103 37 11	3231	105 2 44	3252
	Saturn	W.	92 9 32	2305	93 55 24	2312	95 41 6	2318	97 26 39	2324
	Fomalhaut	W.	72 40 20	2525	74 20 59	2527	76 1 35	2530	77 42 6	2535
	α Pegasi	W.	53 22 45	2864	54 55 50	2848	56 29 16	2834	58 3 0	2821
	Aldebaran	E.	25 50 42	2605	24 11 54	2655	22 34 13	2713	20 57 51	2783
	Sun	E.	89 20 16	2640	87 42 16	2647	86 4 25	2655	84 26 44	2662
5	Saturn	W.	106 11 56	2359	107 56 29	2367	109 40 51	2374	111 25 3	2381
	Fomalhaut	W.	86 3 4	2561	87 42 53	2568	89 22 32	2574	91 2 2	2583
	α Pegasi	W.	65 54 58	2785	67 29 46	2781	69 4 39	2779	70 39 34	2778
	Sun	E.	76 20 46	2699	74 44 5	2707	73 7 34	2715	71 31 14	2722
6	Fomalhaut	W.	99 16 48	2624	100 55 10	2635	102 33 18	2645	104 11 12	2655
	α Pegasi	W.	78 34 9	2785	80 8 57	2788	81 43 40	2793	83 18 17	2798
	α Arietis	W.	35 14 43	2603	36 53 34	2597	38 32 33	2593	40 11 38	2590
	Sun	E.	63 32 13	2764	61 56 58	2772	60 21 54	2782	58 47 2	2790
7	α Pegasi	W.	91 9 26	2833	92 43 11	2842	94 16 45	2851	95 50 7	2861
	α Arietis	W.	48 27 27	2593	50 6 32	2596	51 45 33	2599	53 24 30	2603
	Sun	E.	50 55 34	2836	49 21 53	2845	47 48 24	2855	46 15 8	2866
8	α Pegasi	W.	103 33 28	2920	105 5 21	2935	106 36 56	2950	108 8 12	2965
	α Arietis	W.	61 37 41	2629	63 15 57	2635	64 54 5	2641	66 32 4	2647
	Aldebaran	W.	31 29 50	2729	33 5 51	2722	34 42 1	2719	36 18 16	2716
	Sun	E.	38 32 6	2920	37 0 12	2931	35 28 33	2944	33 57 10	2957
9	α Arietis	W.	74 39 41	2684	76 16 42	2692	77 53 33	2700	79 30 13	2709
	Aldebaran	W.	44 19 53	2720	45 56 6	2723	47 32 15	2728	49 8 18	2733
	Sun	E.	26 24 34	3034	24 55 3	3054	23 25 57	3073	21 57 15	3098
14	Sun	W.	32 26 24	3396	33 48 45	3400	35 11 2	3404	36 33 14	3409
	Spica	E.	28 14 1	3005	26 43 55	3015	25 14 1	3025	23 44 19	3034
	Antares	E.	74 2 47	2985	72 32 16	2993	71 1 54	2999	69 31 40	3005
15	Sun	W.	43 22 54	3431	44 44 35	3435	46 6 12	3439	47 27 44	3443

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15	Antares	E.	68° 1′ 34″	3013	66° 31′ 37″	3019	65° 1′ 48″	3025	63° 32′ 6″	3030
	α Aquilæ	E.	114 16 59	4051	113 6 10	4033	111 55 3	4018	110 43 41	4005
16	Sun	W.	48 49 12	3446	50 10 36	3449	51 31 57	3453	52 53 14	3454
	Antares	E.	56 5 17	3055	54 36 12	3059	53 7 12	3062	51 38 16	3065
	α Aquilæ	E.	104 43 53	3953	103 31 27	3945	102 18 53	3938	101 6 12	3933
17	Sun	W.	59 39 8	3462	61 0 15	3463	62 21 21	3462	63 42 28	3462
	Jupiter	W.	22 4 52	3150	23 32 1	3149	24 59 11	3149	26 26 21	3149
	Venus	W.	17 25 13	3539	18 44 54	3536	20 4 38	3534	21 24 25	3531
	Antares	E.	44 14 26	3075	42 45 46	3076	41 17 7	3077	39 48 29	3077
	α Aquilæ	E.	95 1 37	3914	93 48 31	3912	92 35 23	3911	91 22 14	3910
	Saturn	E.	105 57 7	3059	104 28 7	3060	102 59 8	3060	101 30 9	3060
18	Sun	W.	70 28 21	3451	71 49 40	3448	73 11 2	3444	74 32 29	3440
	Jupiter	W.	33 42 28	3140	35 9 49	3138	36 37 13	3134	38 4 41	3129
	Venus	W.	28 4 7	3515	29 24 15	3511	30 44 27	3506	32 4 44	3502
	Antares	E.	32 25 10	3070	30 56 24	3068	29 27 35	3065	27 58 43	3063
	α Aquilæ	E.	85 16 21	3911	84 3 12	3911	82 50 5	3915	81 37 0	3919
	Saturn	E.	94 5 0	3052	92 35 51	3049	91 6 39	3047	89 37 24	3043
19	Sun	W.	81 21 4	3411	82 43 8	3404	84 5 20	3396	85 27 41	3388
	Jupiter	W.	45 23 27	3103	46 51 33	3096	48 19 47	3090	49 48 9	3082
	Venus	W.	38 47 40	3471	40 8 37	3463	41 29 43	3454	42 50 58	3446
	Spica	W.	25 31 53	3054	27 0 59	3046	28 30 15	3037	29 59 42	3028
	α Aquilæ	E.	75 32 34	3941	74 19 56	3949	73 7 26	3957	71 55 4	3965
	Saturn	E.	82 9 46	3018	80 39 55	3011	79 9 56	3004	77 39 48	2997
	Fomalhaut	E.	102 51 34	3231	101 26 1	3221	100 0 17	3213	98 34 23	3204
20	Sun	W.	92 21 57	3339	93 45 23	3329	95 9 1	3317	96 32 53	3305
	Jupiter	W.	57 12 31	3037	58 41 58	3026	60 11 38	3016	61 41 31	3005
	Venus	W.	49 39 51	3395	51 2 13	3384	52 24 48	3372	53 47 36	3359
	Spica	W.	37 29 54	2978	39 0 34	2967	40 31 28	2955	42 2 37	2943
	α Aquilæ	E.	65 55 46	4028	64 44 34	4045	63 33 39	4064	62 23 2	4084
	Saturn	E.	70 6 42	2954	68 35 31	2944	67 4 8	2934	65 32 32	2923
	Fomalhaut	E.	91 22 10	3156	89 55 8	3146	88 27 54	3135	87 0 27	3125
21	Sun	W.	103 35 52	3239	105 1 15	3225	106 26 55	3209	107 52 53	3194
	Jupiter	W.	69 14 37	2942	70 46 2	2928	72 17 45	2914	73 49 46	2901
	Venus	W.	60 45 25	3291	62 9 47	3276	63 34 27	3260	64 59 25	3244
	Spica	W.	49 42 11	2880	51 14 55	2866	52 47 57	2852	54 21 17	2838
	α Aquilæ	E.	56 35 47	4229	55 27 48	4267	54 20 25	4310	53 13 42	4358
	Saturn	E.	57 51 0	2865	56 17 56	2852	54 44 36	2839	53 10 59	2825
	Fomalhaut	E.	79 40 0	3070	78 11 14	3059	76 42 14	3048	75 13 1	3037
	α Pegasi	E.	100 30 11	3225	99 4 32	3209	97 38 33	3193	96 12 15	3176
22	Sun	W.	115 7 23	3114	116 35 16	3097	118 3 29	3080	119 32 3	3063
	Jupiter	W.	81 34 30	2824	83 8 27	2808	84 42 45	2791	86 17 25	2775
	Venus	W.	72 9 3	3161	73 35 59	3143	75 3 16	3125	76 30 55	3108
	Spica	W.	62 12 45	2762	63 48 3	2746	65 23 42	2729	66 59 43	2713
	Saturn	E.	45 18 24	2756	43 42 58	2741	42 7 13	2726	40 31 8	2711
	Fomalhaut	E.	67 43 29	2982	66 12 54	2972	64 42 6	2962	63 11 6	2953
	α Pegasi	E.	88 55 54	3098	87 27 42	3082	85 59 11	3067	84 30 21	3052
23	Jupiter	W.	94 16 14	2689	95 53 9	2672	97 30 27	2654	99 8 9	2636

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15	Antares E.	62° 2′ 31″	3036	60° 33′ 3″	3042	59° 3′ 42″	3047	57° 34′ 27″	3051
	α Aquilæ E.	109 32 6	3992	108 20 19	3980	107 8 20	3970	105 56 11	3961
16	Sun W.	54 14 29	3456	55 35 42	3459	56 56 52	3460	58 18 1	3462
	Antares E.	50 9 24	3069	48 40 36	3071	47 11 51	.3073	45 43 8	3073
	α Aquilæ E.	99 53 26	3928	98 40 35	3923	97 27 39	3920	96 14 40	3917
17	Sun W.	65 3 35	3461	66 24 43	3459	67 45 53	3456	69 7 6	3454
	Jupiter W.	27 53 31	3148	29 20 42	3147	30 47 55	3145	32 15 10	3143
	Venus W.	22 44 15	3528	24 4 8	3525	25 24 4	3522	26 44 4	3519
	Antares E.	38 19 51	3077	36 51 13	3076	35 22 34	3074	33 53 53	3073
	α Aquilæ E.	90 9 4	3909	88 55 53	3909	87 42 42	3909	86 29 31	3910
	Saturn E.	100 1 10	3059	98 32 10	3058	97 3 9	3056	95 34 6	3054
18	Sun W.	75 54 0	3435	77 15 37	3431	78 37 19	3424	79 59 8	3418
	Jupiter W.	39 32 15	3125	40 59 54	3121	42 27 38	3115	43 55 29	3110
	Venus W.	33 25 6	3497	34 45 34	3490	36 6 9	3484	37 26 51	3478
	Antares E.	26 29 48	3059	25 0 48	3055	23 31 43	3051	22 2 33	3046
	α Aquilæ E.	80 23 59	3921	79 11 1	3925	77 58 7	3930	76 45 18	3935
	Saturn E.	88 8 4	3038	86 38 38	3034	85 9 7	3029	83 39 30	3023
19	Sun W.	86 50 11	3379	88 12 51	3370	89 35 42	3360	90 58 44	3351
	Jupiter W.	51 16 40	3074	52 45 21	3065	54 14 13	3056	55 43 16	3047
	Venus W.	44 12 23	3436	45 33 59	3427	46 55 45	3417	48 17 42	3407
	Spica W.	31 29 20	3018	32 59 10	3009	34 29 12	2998	35 59 27	2989
	α Aquilæ E.	70 42 50	3975	69 30 46	3986	68 18 53	4000	67 7 13	4013
	Saturn E.	76 9 31	2989	74 39 5	2981	73 8 28	2973	71 37 41	2963
	Fomalhaut E.	97 8 19	3195	95 42 4	3186	94 15 38	3176	92 49 0	3166
20	Sun W.	97 56 59	3292	99 21 20	3280	100 45 55	3266	102 10 46	3253
	Jupiter W.	63 11 38	2993	64 42 0	2981	66 12 37	2969	67 43 29	2956
	Venus W.	55 10 39	3346	56 33 57	3332	57 57 31	3319	59 21 20	3306
	Spica W.	43 34 1	2931	45 5 40	2920	46 37 34	2907	48 9 44	2894
	α Aquilæ E.	61 12 45	4108	60 2 51	4133	58 53 21	4162	57 44 19	4194
	Saturn E.	64 0 42	2912	62 28 39	2901	60 56 21	2889	59 23 48	2877
	Fomalhaut E.	85 32 48	3114	84 4 56	3104	82 36 51	3092	81 8 32	3082
21	Sun W.	109 19 9	3179	110 45 43	3163	112 12 37	3147	113 39 50	3130
	Jupiter W.	75 22 4	2886	76 54 41	2870	78 27 38	2855	80 0 54	2840
	Venus W.	66 24 42	3228	67 50 18	3212	69 16 13	3195	70 42 28	3178
	Spica W.	55 54 56	2823	57 28 54	2808	59 3 11	2793	60 37 48	2778
	α Aquilæ E.	52 7 43	4411	51 2 32	4472	49 58 15	4538	48 54 56	4609
	Saturn E.	51 37 4	2812	50 2 52	2798	48 28 21	2784	46 53 32	2769
	Fomalhaut E.	73 43 34	3026	72 13 53	3015	70 43 59	3004	69 13 51	2993
	α Pegasi E.	94 45 37	3160	93 18 40	3143	91 51 23	3129	90 23 48	3113
22	Sun W.	121 0 58	3045	122 30 15	3027	123. 59 54	3010	125 29 54	2992
	Jupiter W.	87 52 26	2758	89 27 49	2741	91 3 35	2724	92 39 43	2707
	Venus W.	77 58 55	3090	79 27 17	3071	80 56 2	3052	82 25 11	3033
	Spica W.	68 36 6	2695	70 12 52	2679	71 50 0	2662	73 27 31	2645
	Saturn E.	38 54 43	2697	37 17 59	2684	35 40 57	2669	34 3 36	2655
	Fomalhaut E.	61 39 54	2944	60 8 31	2935	58 36 56	2927	57 5 13	2921
	α Pegasi E.	83 1 13	3039	81 31 48	3025	80 2 6	3012	78 32 8	2998
23	Jupiter W.	100 46 15	2618	102 24 45	2601	104 3 39	2583	105 42 57	2565

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23	Venus	W.	83° 54′ 43″	3014	85° 24′ 38″	2995	86° 54′ 57″	2976	88° 25′ 40″	2956
	Spica	W.	75 5 25	2627	76 43 43	2610	78 22 25	2593	80 1 30	2575
	Antares	W.	29 10 54	2627	30 49 12	2610	32 27 54	2591	34 7 1	2574
	Saturn	E.	32 25 56	2641	30 47 57	2629	29 9 41	2616	27 31 8	2605
	Fomalhaut	E.	55 33 21	2915	54 1 21	2910	52 29 15	2906	50 57 4	2904
	α Pegasi	E.	77 1 53	2985	75 31 22	2974	74 0 37	2963	72 29 38	2952
24	Venus	W.	96 5 21	2861	97 38 30	2842	99 12 4	2823	100 46 2	2804
	Spica	W.	88 22 58	2488	90 4 28	2470	91 46 23	2453	93 28 42	2436
	Antares	W.	42 28 41	2486	44 10 14	2468	45 52 12	2450	47 34 35	2433
	Fomalhaut	E.	43 16 18	2925	41 44 31	2939	40 13 1	2956	38 41 53	2978
	α Pegasi	E.	64 51 40	2912	63 19 37	2909	61 47 29	2905	60 15 17	2904
	α Arietis	E.	105 52 35	2545	104 12 24	2526	102 31 47	2508	100 50 45	2490
25	Antares	W.	56 12 31	2350	57 57 17	2335	59 42 26	2319	61 27 58	2304
	α Pegasi	E.	52 34 43	2931	51 3 3	2944	49 31 40	2961	48 0 38	2982
	α Arietis	E.	92 19 27	2406	90 36 1	2390	88 52 12	2374	87 8 0	2359
26	Antares	W.	70 21 2	2233	72 8 40	2220	73 56 37	2208	75 44 53	2196
	α Aquilæ	W.	38 29 24	5847	39 16 14	5537	40 6 32	5265	41 0 5	5023
	α Arietis	E.	78 21 49	2291	76 35 37	2280	74 49 8	2268	73 2 22	2258
	Aldebaran	E.	108 45 42	2288	106 59 25	2274	105 12 48	2261	103 25 51	2248
27	Antares	W.	84 50 21	2145	86 40 11	2137	88 30 14	2128	90 20 30	2121
	α Aquilæ	W.	46 10 13	4145	47 19 31	4019	48 30 52	3905	49 44 7	3800
	Saturn	W.	24 4 27	2190	25 53 10	2172	27 42 20	2157	29 31 52	2145
	α Arietis	E.	64 4 56	2215	62 16 51	2209	60 28 37	2204	58 40 15	2200
	Aldebaran	E.	94 26 44	2195	92 38 9	2186	90 49 21	2178	89 0 21	2171
28	α Aquilæ	W.	56 14 28	3411	57 36 32	3354	58 59 41	3302	60 23 50	3255
	Saturn	W.	38 43 32	2102	40 34 28	2096	42 25 33	2092	44 16 45	2088
	α Arietis	E.	49 37 20	2194	47 48 43	2196	46 0 9	2200	44 11 41	2206
	Aldebaran	E.	79 52 58	2145	78 3 8	2143	76 13 14	2141	74 23 17	2139
29	α Aquilæ	W.	67 36 42	3085	69 5 10	3061	70 34 7	3041	72 3 29	3024
	Saturn	W.	53 33 49	2080	55 25 19	2081	57 16 48	2082	59 8 15	2085
	Fomalhaut	W.	35 19 39	2683	36 56 42	2634	38 34 51	2593	40 13 55	2559
	α Arietis	E.	35 12 22	2264	33 25 29	2284	31 39 6	2309	29 53 19	2337
	Aldebaran	E.	65 13 25	2145	63 23 34	2148	61 33 48	2152	59 44 8	2157
	Pollux	E.	108 52 47	2083	107 1 22	2085	105 9 59	2086	103 18 39	2089
30	α Aquilæ	W.	79 34 36	2975	81 5 20	2972	82 36 8	2971	84 6 57	2971
	Saturn	W.	68 24 23	2103	70 15 18	2108	72 6 5	2114	73 56 43	2120
	Fomalhaut	W.	48 39 12	2449	50 21 37	2437	52 4 19	2427	53 47 15	2420
	α Pegasi	W.	32 26 13	3555	33 45 37	3424	35 7 26	3315	36 31 20	3221
	Aldebaran	E.	50 38 13	2196	48 49 40	2208	47 1 24	2220	45 13 26	2233
	Pollux	E.	94 3 14	2110	92 12 30	2115	90 21 54	2121	88 31 27	2128
31	α Aquilæ	W.	91 39 57	3005	93 10 3	3018	94 39 54	3031	96 9 28	3047
	Saturn	W.	83 7 7	2160	84 56 35	2169	86 45 50	2178	88 34 51	2188
	Fomalhaut	W.	62 23 43	2408	64 7 7	2410	65 50 28	2412	67 33 45	2416
	α Pegasi	W.	43 54 1	2920	45 25 54	2883	46 58 34	2852	48 31 55	2825
	Aldebaran	E.	36 19 11	2322	34 33 44	2346	32 48 52	2373	31 4 39	2404
	Pollux	E.	79 22 1	2168	77 32 45	2177	75 43 43	2186	73 54 55	2196
	Sun	E.	125 43 28	2481	124 1 48	2489	122 20 20	2499	120 39 6	2509

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23	Venus	W.	89° 56′ 48″	2937	91° 28′ 20″	2918	93° 0′ 16″	2899	94° 32′ 36″	2880
	Spica	W.	81 40 59	2558	83 20 52	2540	85 1 10	2522	86 41 52	2505
	Antares	W.	35 46 32	2556	37 26 28	2538	39 6 48	2521	40 47 32	2503
	Saturn	E.	25 52 20	2595	24 13 18	2586	22 34 4	2579	20 54 40	2574
	Fomalhaut	E.	49 24 50	2904	47 52 36	2905	46 20 24	2909	44 48 17	2916
	α Pegasi	E.	70 58 25	2942	69 27 0	2933	67 55 23	2925	66 23 36	2918
24	Venus	W.	102 20 25	2785	103 55 12	2767	105 30 23	2749	107 5 58	2732
	Spica	W.	95 11 26	2419	96 54 34	2403	98 38 5	2386	100 22 0	2369
	Antares	W.	49 17 22	2416	51 0 34	2399	52 44 10	2383	54 28 9	2367
	Fomalhaut	E.	37 11 13	3007	35 41 9	3043	34 11 49	3086	32 43 22	3137
	α Pegasi	E.	58 43 3	2904	57 10 49	2907	55 38 39	2912	54 6 36	2920
	α Arietis	E.	99 9 18	2472	97 27 26	2455	95 45 10	2438	94 2 30	2422
25	Antares	W.	63 13 52	2289	65 0 8	2274	66 46 46	2260	68 33 44	2247
	α Pegasi	E.	46 30 3	3009	45 0 1	3041	43 30 39	3079	42 2 4	3124
	α Arietis	E.	85 23 26	2344	83 38 31	2331	81 53 16	2317	80 7 42	2304
26	Antares	W.	77 33 26	2185	79 22 16	2174	81 11 23	2164	83 0 45	2155
	α Aquilæ	W.	41 56 42	4808	42 56 12	4615	43 58 24	4443	45 3 7	4285
	α Arietis	E.	71 15 20	2247	69 28 3	2239	67 40 33	2230	65 52 50	2223
	Aldebaran	E.	101 38 35	2236	99 51 1	2225	98 3 11	2214	96 15 5	2204
27	Antares	W.	92 10 57	2115	94 1 34	2109	95 52 20	2103	97 43 15	2098
	α Aquilæ	W.	50 59 9	3707	52 15 49	2622	53 34 0	3545	54 53 35	3474
	Saturn	W.	31 21 42	2134	33 11 49	2124	35 2 11	2116	36 52 46	2109
	α Arietis	E.	56 51 47	2196	55 3 14	2194	53 14 37	2192	51 25 58	2193
	Aldebaran	E.	87 11 10	2165	85 21 50	2159	83 32 21	2153	81 42 43	2149
28	α Aquilæ	W.	61 48 54	3213	63 14 48	3175	64 41 27	3142	66 8 46	3111
	Saturn	W.	46 8 3	2085	47 59 25	2083	49 50 51	2081	51 42 19	2080
	α Arietis	E.	42 23 22	2212	40 35 13	2222	38 47 18	2233	36 59 40	2247
	Aldebaran	E.	72 33 18	2139	70 43 18	2139	68 53 18	2140	67 3 20	2142
29	α Aquilæ	W.	73 33 12	3009	75 3 14	2997	76 33 31	2988	78 3 59	2981
	Saturn	W.	60 59 38	2087	62 50 57	2090	64 42 12	2094	66 33 21	2098
	Fomalhaut	W.	41 53 47	2529	43 34 20	2503	45 15 29	2482	46 57 8	2464
	α Arietis	E.	28 8 14	2373	26 24 0	2417	24 40 49	2469	22 58 52	2533
	Aldebaran	E.	57 54 36	2164	56 5 14	2170	54 16 2	2178	52 27 1	2186
	Pollux	E.	101 27 23	2092	99 36 12	2096	97 45 6	2099	95 54 6	2105
30	α Aquilæ	W.	85 37 46	2974	87 8 31	2980	88 39 9	2987	90 9 38	2995
	Saturn	W.	75 47 11	2128	77 37 28	2136	79 27 33	2143	81 17 26	2151
	Fomalhaut	W.	55 30 21	2415	57 13 35	2410	58 56 55	2408	60 40 18	2407
	α Pegasi	W.	37 57 4	3141	39 24 24	3073	40 53 7	3014	42 23 2	2963
	Aldebaran	E.	43 25 47	2247	41 38 30	2264	39 51 37	2281	38 5 10	2300
	Pollux	E.	86 41 11	2136	84 51 6	2143	83 1 12	2151	81 11 30	2159
31	α Aquilæ	W.	97 38 43	3065	99 7 36	3083	100 36 6	3104	102 4 11	3127
	Saturn	W.	90 23 37	2198	92 12 8	2208	94 0 24	2218	95 48 24	2229
	Fomalhaut	W.	69 16 57	2421	71 0 2	2426	72 43 0	2432	74 25 49	2440
	α Pegasi	W.	50 5 50	2803	51 40 14	2783	53 15 4	2768	54 50 14	2756
	Aldebaran	E.	29 21 10	2439	27 38 31	2479	25 56 48	2525	24 16 10	2584
	Pollux	E.	72 6 21	2206	70 18 2	2216	68 29 59	2227	66 42 11	2237
	SUN	E.	118 58 5	2520	117 17 19	2530	115 36 47	2540	113 56 30	2552

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	10 41 46.91	9.069	N. 8 15 50.2	–54.48	15 53.78	64.42	0 8.27	0.785
Wed.	2	10 45 24.47	9.058	7 53 58.7	54.81	15 54.00	64.37	0 27.22	0.796
Thur.	3	10 49 1.76	9.048	7 31 59.4	55.13	15 54.23	64.33	0 46.42	0.806
Frid.	4	10 52 38.82	9.039	7 9 52.7	55.43	15 54.46	64.29	1 5.85	0.815
Sat.	5	10 56 15.65	9.030	6 47 38.8	55.72	15 54.70	64.26	1 25.52	0.824
Sun.	6	10 59 52.26	9.022	6 25 18.1	56.00	15 54.94	64.23	1 45.41	0.832
Mon.	7	11 3 28 67	9.013	6 2 50.8	56.27	15 55.18	64.20	2 5.50	0.841
Tues.	8	11 7 4.91	9.006	5 40 17.5	56.52	15 55.42	64.17	2 25.76	0.848
Wed.	9	11 10 40.99	9.000	5 17 38.3	56.76	15 55.67	64.15	2 46.18	0.854
Thur.	10	11 14 16.93	8.994	4 54 53.8	56.97	15 55.92	64.13	3 6.14	0.860
Frid.	11	11 17 52.73	8.989	4 32 4.0	57.16	15 56.17	64.11	3 27.44	0.865
Sat.	12	11 21 28.42	8.985	4 9 9.6	57.35	15 56.43	64.09	3 48.24	0.869
Sun.	13	11 25 4.00	8.981	3 46 10.7	57.53	15 56.69	64.08	4 9.16	0.873
Mon.	14	11 28 39.50	8.977	3 23 7.9	57.69	15 56.95	64.07	4 30.15	0.877
Tues.	15	11 32 14.95	8.975	3 0 1.4	57.83	15 57.22	64.06	4 51.20	0.879
Wed.	16	11 35 50.34	8.974	2 36 51.7	57.97	15 57.48	64.06	5 12.31	0.880
Thur.	17	11 39 25.69	8.973	2 13 38.9	58.08	15 57.75	64.06	5 33.46	0.881
Frid.	18	11 43 1.04	8.973	1 50 23.5	58.18	15 58.02	64.06	5 54.60	0.881
Sat.	19	11 46 36.40	8.974	1 27 5.9	58.27	15 58.29	64.06	6 15.74	0.880
Sun.	20	11 50 11.79	8.975	1 3 46.5	58.34	15 58.56	64.07	6 36.84	0.879
Mon.	21	11 53 47.23	8.978	0 40 25.3	58.40	15 58.84	64.08	6 57.89	0.876
Tues.	22	11 57 22.74	8.982	N. 0 17 2.9	58.44	15 59.11	64.09	7 18.87	0.872
Wed.	23	12 0 58.34	8.987	S. 0 6 20.4	58.48	15 59.38	64.11	7 39.77	0.867
Thur.	24	12 4 34.06	8.993	0 29 44.3	58.50	15 59.65	64.13	8 0.55	0.861
Frid.	25	12 8 9.94	8.998	0 53 8.5	58.50	15 59.93	64.16	8 21.17	0.856
Sat.	26	12 11 45.98	9.006	1 16 32.7	58.49	16 0.20	64.19	8 41.63	0.848
Sun.	27	12 15 22.21	9.014	1 39 56.6	58.48	16 0.47	64.22	9 1.91	0.840
Mon.	28	12 18 58.66	9.024	2 3 19.8	58.44	16 0.74	64.25	9 21.97	0.831
Tues.	29	12 22 35.35	9.034	2 26 42.1	58.39	16 1.02	64.29	9 41.77	0.821
Wed.	30	12 26 12.30	9.045	2 50 3.1	58.34	16 1.29	64.33	10 1.31	0.809
Thur.	31	12 29 49.53	9.057	S. 3 13 22.5	–58.27	16 1.56	64.37	10 20.58	0.797

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

— prefixed to the hourly change of declination, indicates that north declinations are decreasing, and south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	10 41 46.91	9.071	N. 8 15 50.2	-54.49	0 8.27	0.785	10 41 55.18
Wed.	2	10 45 24.52	9.060	7 53 58.4	54.82	0 27.21	0.796	10 45 51.73
Thur.	3	10 49 1.86	9.050	7 31 58.8	55.14	0 46.43	0.806	10 49 48.29
Frid.	4	10 52 38.97	9.041	7 9 51.8	55.44	1 5.87	0.815	10 53 44.84
Sat.	5	10 56 15.85	9.032	6 47 37.6	55.73	1 25.54	0.824	10 57 41.39
Sun.	6	10 59 52.51	9.024	6 25 16.6	56.01	1 45.43	0.832	11 1 37.94
Mon.	7	11 3 28.97	9.015	6 2 49.0	56.28	2 5.53	0.841	11 5 34.50
Tues.	8	11 7 5.26	9.008	5 40 15.3	56.53	2 25.79	0.848	11 9 31.05
Wed.	9	11 10 41.39	9.002	5 17 35.8	56.77	2 46.22	0.854	11 13 27.61
Thur.	10	11 14 17.38	8.996	4 54 50.9	56.98	3 6.78	0.860	11 17 24.16
Frid.	11	11 17 53.23	8.991	4 32 0.8	57.18	3 27.49	0.865	11 21 20.72
Sat.	12	11 21 28.97	8.987	4 9 6.1	57.37	3 48.30	0.869	11 25 17.27
Sun.	13	11 25 4.60	8.983	3 46 6.9	57.55	4 9.22	0.873	11 29 13.82
Mon.	14	11 28 40.16	8.979	3 23 3.7	57.71	4 30.21	0.877	11 33 10.37
Tues.	15	11 32 15.66	8.977	2 59 56.8	57.85	4 51.27	0.879	11 37 6.93
Wed.	16	11 35 51.10	8.976	2 36 46.8	57.99	5 12.38	0.880	11 41 3.48
Thur.	17	11 39 26.50	8.975	2 13 33.6	58.10	5 33.54	0.881	11 45 0.04
Frid.	18	11 43 1.90	8.975	1 50 17.9	58.20	5 54.69	0.881	11 48 56.59
Sat.	19	11 46 37.32	8.976	1 26 59.9	58.29	6 15.83	0.880	11 52 53.15
Sun.	20	11 50 12.76	8.977	1 3 40.1	58.36	6 36.94	0.879	11 56 49.70
Mon.	21	11 53 48.26	8.980	0 40 18.6	58.42	6 57.99	0.876	12 0 46.25
Tues.	22	11 57 23.83	8.984	N. 0 16 55.9	58.46	7 18.97	0.872	12 4 42.80
Wed.	23	12 0 59.48	8.989	S. 0 6 27.8	58.50	7 39.88	0.867	12 8 39.36
Thur.	24	12 4 35.25	8.995	0 29 52.0	58.52	8 0.66	0.861	12 12 35.91
Frid.	25	12 8 11.18	9.000	0 53 16.5	58.52	8 21.29	0.856	12 16 32.47
Sat.	26	12 11 47.27	9.008	1 16 41.1	58.51	8 41.75	0.848	12 20 29.02
Sun.	27	12 15 23.55	9.016	1 40 5.3	58.50	9 2.03	0.840	12 24 25.58
Mon.	28	12 19 0.05	9.026	2 3 28.8	58.46	9 22.08	0.831	12 28 22.13
Tues.	29	12 22 36.79	9.036	2 26 51.4	58.41	9 41.89	0.821	12 32 18.68
Wed.	30	12 26 13.79	9.047	2 50 12.7	58.36	10 1.44	0.809	12 36 15.23
Thur.	31	12 29 51.08	9.059	S. 3 13 32.4	-58.28	10 20.71	0.797	12 40 11.79

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon

Diff. for 1 hour. $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ			λ′		Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.		
		°	′	″	′	″	″	″			h	m	s
1	244	158	50	22.7	49	56.5	145.28	+0.08	0.0037260	−42.9	13	15	54.07
2	245	159	48	30.4	48	4.1	145.36	0.22	.0036226	43.3	13	11	58.16
3	246	160	46	40.2	46	13.8	145.45	0.33	.0035183	43.7	13	8	2.25
4	247	161	44	52.0	44	25.5	145.53	0.42	.0034129	44.1	13	4	6.35
5	248	162	43	5.8	42	39.2	145.62	0.48	.0033064	44.6	13	0	10.44
6	249	163	41	21.6	40	54.9	145.70	0.53	.0031986	45.1	12	56	14.53
7	250	164	39	39.4	39	12.5	145.78	0.54	.0030895	45.7	12	52	18.62
8	251	165	37	59.2	37	32.1	145.86	0.51	.0029792	46.3	12	48	22.71
9	252	166	36	20.9	35	53.7	145.94	0.46	.0028674	46.9	12	44	26.81
10	253	167	34	44.6	34	17.3	146.02	0.37	.0027541	47.5	12	40	30.90
11	254	168	33	10.2	32	42.8	146.10	0.28	.0026393	48.1	12	36	34.99
12	255	169	31	37.6	31	9.1	146.18	0.16	.0025231	48.7	12	32	39.08
13	256	170	30	6.8	29	39.2	146.25	+0.03	.0024055	49.2	12	28	43.18
14	257	171	28	37.8	28	10.1	146.33	−0.11	.0022867	49.7	12	24	47.27
15	258	172	27	10.6	26	42.8	146.40	0.24	.0021667	50.2	12	20	51.36
16	259	173	25	45.1	25	17.2	146.47	0.37	.0020456	50.6	12	16	55.45
17	260	174	24	21.1	23	53.1	146.54	0.48	.0019236	51.0	12	12	59.54
18	261	175	22	58.8	22	30.6	146.61	0.57	.0018009	51.3	12	9	3.63
19	262	176	21	38.3	21	10.0	146.68	0.63	.0016776	51.5	12	5	7.73
20	263	177	20	19.5	19	51.1	146.75	0.65	.0015537	51.6	12	1	11.83
21	264	178	19	2.3	18	33.8	146.82	0.65	.0014295	51.7	11	57	15.92
22	265	179	17	46.8	17	17.2	146.90	0.61	.0013054	51.7	11	53	20.01
23	266	180	16	33.1	16	4.4	146.97	0.55	.0011813	51.7	11	49	24.10
24	267	181	15	21.3	14	52.5	147.05	0.46	.0010573	51.6	11	45	28.19
25	268	182	14	11.4	13	42.5	147.13	0.34	.0009335	51.5	11	41	32.28
26	269	183	13	3.5	12	34.5	147.21	0.21	.0008100	51.4	11	37	36.37
27	270	184	11	57.6	11	28.5	147.29	−0.07	.0006867	51.3	11	33	40.46
28	271	185	10	53.7	10	24.5	147.38	+0.07	.0005637	51.2	11	29	44.56
29	272	186	9	52.0	9	22.7	147.48	0.20	.0004409	51.1	11	25	48.65
30	273	187	8	52.6	8	23.2	147.59	0.31	.0003183	51.1	11	21	52.74
31	274	188	7	55.5	7	26.0	147.67	+0.41	0.0001959	−51.0	11	17	56.84

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
$-9^{s}.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 16.2	16 11.4	59 36.1	-1.41	59 18.5	-1.52	16 49.6	2.33	20.3
2	16 6.3	16 1.0	58 59.8	1.59	58 40.5	1.63	17 46.7	2.42	21.3
3	15 55.6	15 50.3	58 20.9	1.64	58 1.2	1.63	18 45.5	2.46	22.3
4	15 45.1	15 39.9	57 41.9	1.60	57 22.9	1.55	19 44.2	2.42	23.3
5	15 34.9	15 30.1	57 4.6	1.50	56 46.9	1.45	20 40.9	2.30	24.3
6	15 25.5	15 21.0	56 29.9	1.39	56 13.6	1.33	21 34.2	2.14	25.3
7	15 16.8	15 12.8	55 58.1	1.26	55 43.4	1.19	22 23.5	1.97	26.3
8	15 9.0	15 5.4	55 29.5	1.12	55 16.4	1.06	23 9.0	1.83	27.3
9	15 2.1	14 59.0	55 4.1	0.98	54 52.8	0.91	23 51.5	1.72	28.3
10	14 56.2	14 53.6	54 42.3	0.83	54 32.8	0.75	6		29.3
11	14 51.3	14 49.3	54 24.4	0.66	54 17.0	0.56	0 31.9	1.65	0.7
12	14 46.7	14 46.3	54 10.9	0.46	54 6.1	0.34	1 11.2	1.63	1.7
13	14 45.4	14 45.0	54 2.8	-0.21	54 1.2	-0.07	1 50.6	1.65	2.7
14	14 45.0	14 45.6	54 1.3	+0.09	54 3.3	+0.25	2 30.9	1.71	3.7
15	14 46.7	14 48.4	54 7.4	0.43	54 13.6	0.61	3 13.2	1.82	4.7
16	14 50.7	14 53.6	54 22.1	0.80	54 32.9	1.00	3 58.3	1.95	5.7
17	14 57.2	15 1.5	54 46.1	1.20	55 1.7	1.40	4 46.7	2.09	6.7
18	15 6.4	15 11.9	55 19.6	1.59	55 39.8	1.77	5 38.7	2.23	7.7
19	15 17.9	15 24.5	56 2.2	1.95	56 26.5	2.10	6 33.5	2.33	8.7
20	15 31.6	15 39.1	56 52.5	2.23	57 19.9	2.33	7 30.0	2.36	9.7
21	15 46.8	15 54.7	57 48.3	2.39	58 17.1	2.40	8 26.6	2.34	10.7
22	16 2.5	16 10.1	58 45.9	2.37	59 13.9	2.28	9 21.9	2.27	11.7
23	16 17.3	16 24.0	59 40.4	2.13	60 4.8	1.92	10 15.5	2.20	12.7
24	16 29.9	16 34.8	60 26.4	1.66	60 44.5	1.35	11 7.5	2.15	13.7
25	16 38.6	16 41.2	60 58.7	0.99	61 8.3	+0.61	11 58.8	2.14	14.7
26	16 42.5	16 42.6	61 13.2	+0.21	61 13.3	-0.19	12 50.4	2.18	15.7
27	16 41.3	16 38.8	61 8.6	-0.59	60 59.3	0.95	13 43.6	2.26	16.7
28	16 35.2	16 30.6	60 45.9	1.27	60 28.9	1.55	14 39.2	2.38	17.7
29	16 25.1	16 19.0	60 8.9	1.78	59 46.4	1.95	15 37.5	2.48	18.7
30	16 12.4	16 5.5	59 22.3	2.07	58 57.0	2.13	16 37.8	2.52	19.7
31	15 58.5	15 51.5	58 31.3	-2.15	58 5.6	-2.12	17 38.1	2.49	20.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 1.					**THURSDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 54 19.03	2.3387	N.18 23 10.1	13.209	0	4 51 0.76	2.5085	N.26 17 36.7	6.144
1	2 56 39.47	2.3427	18 36 19.1	13.090	1	4 53 31.33	2.5105	26 23 40.3	5.975
2	2 59 0.15	2.3468	18 49 20.9	12.970	2	4 56 2.02	2.5125	26 29 33.7	5.804
3	3 1 21.08	2.3508	19 2 15.5	12.849	3	4 58 32.83	2.5144	26 35 16.8	5.633
4	3 3 42.25	2.3548	19 15 2.8	12.726	4	5 1 3.75	2.5162	26 40 49.7	5.462
5	3 6 3.66	2.3588	19 27 42.6	12.601	5	5 3 34.77	2.5178	26 46 12.3	5.291
6	3 8 25.31	2.3629	19 40 14.9	12.475	6	5 6 5.88	2.5193	26 51 24.7	5.120
7	3 10 47.21	2.3670	19 52 39.6	12.348	7	5 8 37.09	2.5208	26 56 26.7	4.947
8	3 13 9.35	2.3711	20 4 56.6	12.220	8	5 11 8.37	2.5221	27 1 18.3	4.774
9	3 15 31.74	2.3752	20 17 5.9	12.091	9	5 13 39.73	2.5233	27 5 59.5	4.601
10	3 17 54.37	2.3793	20 29 7.4	11.960	10	5 16 11.16	2.5243	27 10 30.4	4.428
11	3 20 17.25	2.3834	20 41 0.9	11.827	11	5 18 42.65	2.5253	27 14 50.9	4.255
12	3 22 40.38	2.3875	20 52 46.5	11.693	12	5 21 14.20	2.5262	27 19 1.0	4.081
13	3 25 3.75	2.3915	21 4 24.0	11.557	13	5 23 45.80	2.5270	27 23 0.6	3.906
14	3 27 27.36	2.3956	21 15 53.3	11.421	14	5 26 17.44	2.5276	27 26 49.7	3.732
15	3 29 51.22	2.3996	21 27 14.5	11.283	15	5 28 49.11	2.5281	27 30 28.4	3.557
16	3 32 15.31	2.4036	21 38 27.3	11.143	16	5 31 20.81	2.5284	27 33 56.6	3.382
17	3 34 39.65	2.4077	21 49 31.7	11.003	17	5 33 52.52	2.5287	27 37 14.3	3.207
18	3 37 4.23	2.4117	22 0 27.7	10.862	18	5 36 24.25	2.5288	27 40 21.5	3.032
19	3 39 29.05	2.4156	22 11 15.2	10.719	19	5 38 55.98	2.5288	27 43 18.2	2.857
20	3 41 54.10	2.4195	22 21 54.0	10.575	20	5 41 27.71	2.5287	27 46 4.4	2.682
21	3 44 19.39	2.4234	22 32 24.2	10.430	21	5 43 59.43	2.5285	27 48 40.1	2.507
22	3 46 44.92	2.4273	22 42 45.7	10.284	22	5 46 31.13	2.5281	27 51 5.3	2.332
23	3 49 10.67	2.4311	N.22 52 58.3	10.137	23	5 49 2.80	2.5277	N.27 53 20.0	2.157
	WEDNESDAY 2.					**FRIDAY 4.**			
0	3 51 36.65	2.4349	N.23 3 2.1	9.990	0	5 51 34.45	2.5271	N.27 55 24.2	1.982
1	3 54 2.86	2.4387	23 12 57.1	9.840	1	5 54 6.05	2.5263	27 57 17.9	1.807
2	3 56 29.29	2.4424	23 22 42.9	9.688	2	5 56 37.60	2.5254	27 59 1.1	1.633
3	3 58 55.95	2.4461	23 32 19.6	9.537	3	5 59 9.10	2.5244	28 0 33.9	1.459
4	4 1 22.82	2.4497	23 41 47.3	9.385	4	6 1 40.53	2.5233	28 1 56.2	1.285
5	4 3 49.91	2.4533	23 51 5.7	9.231	5	6 4 11.89	2.5220	28 3 8.1	1.111
6	4 6 17.22	2.4569	24 0 14.9	9.076	6	6 6 43.17	2.5206	28 4 9.5	0.937
7	4 8 44.74	2.4603	24 9 14.8	8.920	7	6 9 14.36	2.5191	28 5 0.5	0.763
8	4 11 12.46	2.4637	24 18 5.3	8.763	8	6 11 45.46	2.5175	28 5 41.1	0.590
9	4 13 40.38	2.4670	24 26 46.4	8.606	9	6 14 16.46	2.5157	28 6 11.4	0.418
10	4 16 8.50	2.4703	24 35 18.0	8.447	10	6 16 47.35	2.5138	28 6 31.3	0.246
11	4 18 36.82	2.4736	24 43 40.0	8.288	11	6 19 18.12	2.5118	28 6 40.9	+0.074
12	4 21 5.33	2.4768	24 51 52.5	8.128	12	6 21 48.76	2.5096	28 6 40.1	−0.098
13	4 23 34.03	2.4798	24 59 55.4	7.967	13	6 24 19.27	2.5073	28 6 29.1	0.269
14	4 26 2.91	2.4828	25 7 48.5	7.805	14	6 26 49.64	2.5050	28 6 7.8	0.440
15	4 28 31.97	2.4858	25 15 31.9	7.642	15	6 29 19.87	2.5025	28 5 36.3	0.610
16	4 31 1.21	2.4887	25 23 5.5	7.478	16	6 31 49.94	2.4998	28 4 54.6	0.780
17	4 33 30.61	2.4915	25 30 29.3	7.314	17	6 34 19.85	2.4971	28 4 2.7	0.949
18	4 36 0.18	2.4942	25 37 43.2	7.149	18	6 36 49.59	2.4942	28 3 0.7	1.118
19	4 38 29.91	2.4968	25 44 47.2	6.983	19	6 39 19.15	2.4912	28 1 48.6	1.285
20	4 40 59.79	2.4993	25 51 41.2	6.817	20	6 41 48.53	2.4881	28 0 26.5	1.452
21	4 43 29.82	2.5017	25 58 25·2	6.650	21	6 44 17.72	2.4848	27 58 54.3	1.619
22	4 46 0.00	2.5041	26 4 59.2	6.482	22	6 46 46.71	2.4814	27 57 12.2	1.785
23	4 48 30.31	2.5063	26 11 23.0	6.313	23	6 49 15.49	2.4780	27 55 20.1	1.951
24	4 51 0.76	2.5085	N.26 17 36.7	6.144	24	6 51 44.07	2.4745	N.27 53 18.1	2.115

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 51 44.07	2.4745	N.27 53 18.1	2.115
1	6 54 12.43	2.4708	27 51 6.3	2.279
2	6 56 40.56	2.4671	27 48 44.7	2.442
3	6 59 8.47	2.4632	27 46 13.3	2.604
4	7 1 36.14	2.4591	27 43 32.2	2.765
5	7 4 3.56	2.4550	27 40 41.5	2.925
6	7 6 30.73	2.4508	27 37 41.2	3.085
7	7 8 57.65	2.4464	27 34 31.3	3.244
8	7 11 24.30	2.4420	27 31 11.9	3.402
9	7 13 50.69	2.4376	27 27 43.1	3.558
10	7 16 16.81	2.4330	27 24 4.9	3.714
11	7 18 42.65	2.4283	27 20 17.4	3.870
12	7 21 8.21	2.4236	27 16 20.5	4.025
13	7 23 33.48	2.4187	27 12 14.4	4.178
14	7 25 58.45	2.4138	27 7 59.2	4.329
15	7 28 23.13	2.4088	27 3 34.9	4.480
16	7 30 47.51	2.4037	26 59 1.5	4.630
17	7 33 11.57	2.3985	26 54 19.2	4.779
18	7 35 35.32	2.3933	26 49 28.0	4.927
19	7 37 58.76	2.3879	26 44 27.9	5.074
20	7 40 21.87	2.3825	26 39 19.1	5.220
21	7 42 44.66	2.3771	26 34 1.5	5.365
22	7 45 7.12	2.3716	26 28 35.3	5.508
23	7 47 29.25	2.3660	N.26 23 0.5	5.651

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 49 51.04	2.3603	N.26 17 17.2	5.792
1	7 52 12.49	2.3546	26 11 25.4	5.933
2	7 54 33.59	2.3489	26 5 25.3	6.072
3	7 56 54.35	2.3431	25 59 16.8	6.210
4	7 59 14.76	2.3372	25 53 0.1	6.346
5	8 1 34.81	2.3313	25 46 35.3	6.481
6	8 3 54.51	2.3253	25 40 2.4	6.615
7	8 6 13.85	2.3193	25 33 21.5	6.748
8	8 8 32.83	2.3133	25 26 32.6	6.880
9	8 10 51.44	2.3072	25 19 35.8	7.011
10	8 13 9.69	2.3011	25 12 31.2	7.140
11	8 15 27.57	2.2949	25 5 19.0	7.268
12	8 17 45.08	2.2887	24 57 59.1	7.395
13	8 20 2.22	2.2825	24 50 31.6	7.521
14	8 22 18.98	2.2763	24 42 56.6	7.645
15	8 24 35.37	2.2700	24 35 14.2	7.768
16	8 26 51.38	2.2637	24 27 24.5	7.890
17	8 29 7.02	2.2574	24 19 27.5	8.011
18	8 31 22.28	2.2511	24 11 23.3	8.130
19	8 33 37.15	2.2448	24 3 12.0	8.247
20	8 35 51.65	2.2385	23 54 53.7	8.364
21	8 38 5.77	2.2321	23 46 28.3	8.479
22	8 40 19.50	2.2257	23 37 56.1	8.593
23	8 42 32.85	2.2193	23 29 17.1	8.706
24	8 44 45.82	2.2129	N.23 20 31.3	8.818

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 44 45.82	2.2129	N.23 20 31.3	8.818
1	8 46 58.40	2.2065	23 11 38.9	8.928
2	8 49 10.60	2.2001	23 2 39.9	9.037
3	8 51 22.41	2.1937	22 53 34.4	9.145
4	8 53 33.84	2.1873	22 44 22.5	9.251
5	8 55 44.89	2.1810	22 35 4.3	9.356
6	8 57 55.56	2.1747	22 25 39.7	9.461
7	9 0 5.85	2.1683	22 16 8.9	9.563
8	9 2 15.76	2.1620	22 6 32.1	9.664
9	9 4 25.29	2.1557	21 56 49.2	9.764
10	9 6 34.44	2.1493	21 47 0.4	9.863
11	9 8 43.21	2.1430	21 37 5.7	9.961
12	9 10 51.60	2.1367	21 27 5.1	10.058
13	9 12 59.61	2.1304	21 16 58.8	10.152
14	9 15 7.25	2.1242	21 6 46.9	10.245
15	9 17 14.51	2.1179	20 56 29.4	10.337
16	9 19 21.40	2.1117	20 46 6.4	10.428
17	9 21 27.92	2.1055	20 35 38.0	10.518
18	9 23 34.06	2.0993	20 25 4.2	10.607
19	9 25 39.84	2.0932	20 14 25.1	10.694
20	9 27 45.25	2.0872	20 3 40.9	10.780
21	9 29 50.30	2.0811	19 52 51.5	10.866
22	9 31 54.98	2.0750	19 41 57.0	10.950
23	9 33 59.30	2.0691	N.19 30 57.6	11.032

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 36 3.27	2.0632	N.19 19 53.2	11.113
1	9 38 6.88	2.0573	19 8 44.0	11.193
2	9 40 10.14	2.0513	18 57 30.0	11.271
3	9 42 13.04	2.0454	18 46 11.4	11.348
4	9 44 15.59	2.0396	18 34 48.2	11.324
5	9 46 17.80	2.0339	18 23 20.5	11.499
6	9 48 19.66	2.0282	18 11 48.3	11.573
7	9 50 21.18	2.0225	18 0 11.7	11.646
8	9 52 22.36	2.0168	17 48 30.8	11.718
9	9 54 23.20	2.0112	17 36 45.6	11.789
10	9 56 23.70	2.0057	17 24 56.2	11.858
11	9 58 23.88	2.0003	17 13 2.7	11.925
12	10 0 23.74	1.9948	17 1 5.2	11.992
13	10 2 23.26	1.9893	16 49 3.7	12.058
14	10 4 22.46	1.9840	16 36 58.3	12.122
15	10 6 21.34	1.9787	16 24 49.1	12.185
16	10 8 19.90	1.9734	16 12 36.2	12.247
17	10 10 18.15	1.9682	16 0 19.6	12.308
18	10 12 16.08	1.9630	15 47 59.3	12.368
19	10 14 13.71	1.9579	15 35 35.5	12.426
20	10 16 11.03	1.9528	15 23 8.2	12.484
21	10 18 8.05	1.9479	15 10 37.4	12.541
22	10 20 4.78	1.9430	14 58 3.2	12.596
23	10 22 1.21	1.9381	14 45 25.8	12.650
24	10 23 57.35	1.9333	N.14 32 45.2	12.703

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 23 57.35	1.9333	N. 14 32 45.2	12.703
1	10 25 53.21	1.9286	14 20 1.4	12.755
2	10 27 48.78	1.9239	14 7 14.6	12.806
3	10 29 44.07	1.9192	13 54 24.7	12.856
4	10 31 39.08	1.9146	13 41 31.8	12.905
5	10 33 33.82	1.9101	13 28 36.0	12.953
6	10 35 28.29	1.9057	13 15 37.4	13.000
7	10 37 22.50	1.9013	13 2 36.0	13.046
8	10 39 16.44	1.8969	12 49 31.9	13.091
9	10 41 10.12	1.8926	12 36 25.1	13.135
10	10 43 3.55	1.8884	12 23 15.7	13.177
11	10 44 56.73	1.8842	12 10 3.8	13.218
12	10 46 49.65	1.8800	11 56 49.5	13.258
13	10 48 42.33	1.8760	11 43 32.8	13.298
14	10 50 34.77	1.8721	11 30 13.7	13.337
15	10 52 26.98	1.8682	11 16 52.3	13.375
16	10 54 18.95	1.8643	11 3 28.7	13.411
17	10 56 10.70	1.8606	10 50 3.0	13.447
18	10 58 2.22	1.8568	10 36 35.1	13.482
19	10 59 53.52	1.8531	10 23 5.2	13.515
20	11 1 44.60	1.8495	10 9 33.3	13.548
21	11 3 35.46	1.8459	9 55 59.4	13.580
22	11 5 26.11	1.8425	9 42 23.6	13.610
23	11 7 16.56	1.8391	N. 9 28 46.1	13.640

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 9 6.81	1.8358	N. 9 15 6.8	13.669
1	11 10 56.86	1.8325	9 1 25.8	13.698
2	11 12 46.71	1.8293	8 47 43.1	13.725
3	11 14 36.37	1.8262	8 33 58.8	13.751
4	11 16 25.85	1.8231	8 20 13.0	13.776
5	11 18 15.15	1.8201	8 6 25.7	13.800
6	11 20 4.26	1.8171	7 52 37.0	13.823
7	11 21 53.20	1.8143	7 38 46.9	13.846
8	11 23 41.97	1.8115	7 24 55.5	13.868
9	11 25 30.58	1.8088	7 11 2.8	13.889
10	11 27 19.03	1.8061	6 57 8.9	13.908
11	11 29 7.31	1.8034	6 43 13.9	13.927
12	11 30 55.43	1.8008	6 29 17.7	13.945
13	11 32 43.40	1.7984	6 15 20.5	13.962
14	11 34 31.23	1.7960	6 1 22.3	13.979
15	11 36 18.92	1.7936	5 47 23.1	13.995
16	11 38 6.47	1.7913	5 33 23.0	14.009
17	11 39 53.88	1.7891	5 19 22.1	14.022
18	11 41 41.16	1.7870	5 5 20.4	14.035
19	11 43 28.32	1.7850	4 51 17.9	14.047
20	11 45 15.36	1.7830	4 37 14.8	14.058
21	11 47 2.28	1.7810	4 23 11.0	14.069
22	11 48 49.08	1.7791	4 9 6.6	14.078
23	11 50 35.77	1.7773	3 55 1.7	14.087
24	11 52 22.35	1.7755	N. 3 40 56.2	14.095

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 52 22.35	1.7755	N. 3 40 56.2	14.095
1	11 54 8.83	1.7738	3 26 50.3	14.102
2	11 55 55.21	1.7723	3 12 44.0	14.108
3	11 57 41.50	1.7708	2 58 37.4	14.113
4	11 59 27.70	1.7693	2 44 30.5	14.117
5	12 1 13.81	1.7678	2 30 23.4	14.121
6	12 2 59.84	1.7665	2 16 16.0	14.124
7	12 4 45.79	1.7652	2 2 8.5	14.126
8	12 6 31.67	1.7640	1 48 0.9	14.128
9	12 8 17.47	1.7628	1 33 53.2	14.129
10	12 10 3.20	1.7618	1 19 45.5	14.128
11	12 11 48.88	1.7608	1 5 37.9	14.127
12	12 13 34.50	1.7598	0 51 30.3	14.126
13	12 15 20.06	1.7589	0 37 22.8	14.123
14	12 17 5.57	1.7582	0 23 15.5	14.119
15	12 18 51.04	1.7575	N. 0 9 8.5	14.115
16	12 20 36.47	1.7568	S. 0 4 58.2	14.111
17	12 22 21.86	1.7562	0 19 4.7	14.106
18	12 24 7.21	1.7556	0 33 10.9	14.099
19	12 25 52.53	1.7552	0 47 16.6	14.091
20	12 27 37.83	1.7548	1 1 21.8	14.083
21	12 29 23.11	1.7545	1 15 26.6	14.075
22	12 31 8.37	1.7542	1 29 30.8	14.065
23	12 32 53.61	1.7539	S. 1 43 34.4	14.055

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 34 38.84	1.7538	S. 1 57 37.4	14.044
1	12 36 24.07	1.7538	2 11 39.7	14.032
2	12 38 9.29	1.7537	2 25 41.3	14.020
3	12 39 44.51	1.7538	2 39 42.1	14.007
4	12 41 39.74	1.7539	2 53 42.1	13.993
5	12 43 24.98	1.7542	3 7 41.2	13.978
6	12 45 10.24	1.7545	3 21 39.4	13.962
7	12 46 55.52	1.7548	3 35 36.6	13.946
8	12 48 40.82	1.7551	3 49 32.9	13.930
9	12 50 26.14	1.7555	4 3 28.2	13.913
10	12 52 11.48	1.7560	4 17 22.4	13.894
11	12 53 56.86	1.7566	4 31 15.4	13.875
12	12 55 42.28	1.7573	4 45 7.3	13.855
13	12 57 27.73	1.7580	4 58 58.0	13.834
14	12 59 13.24	1.7589	5 12 47.4	13.812
15	13 0 58.80	1.7598	5 26 35.5	13.790
16	13 2 44.41	1.7607	5 40 22.3	13.767
17	13 4 30.08	1.7616	5 54 7.6	13.743
18	13 6 15.80	1.7625	6 7 51.5	13.719
19	13 8 1.59	1.7637	6 21 33.9	13.694
20	13 9 47.45	1.7650	6 35 14.8	13.669
21	13 11 33.39	1.7663	6 48 54.2	13.642
22	13 13 19.40	1.7675	7 2 31.9	13.615
23	13 15 5.49	1.7688	7 16 8.0	13.587
24	13 16 51.66	1.7703	S. 7 29 42.4	13.559

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 13.			
	h m s	s	° ′ ″	″
0	13 16 51.66	1.7703	S. 7 29 42.4	13.559
1	13 18 37.92	1.7718	7 43 15.1	13.529
2	13 20 24.28	1.7734	7 56 45.9	13.498
3	13 22 10.73	1.7750	8 10 14.9	13.468
4	13 23 57.28	1.7767	8 23 42.1	13.436
5	13 25 43.93	1.7784	8 37 7.3	13.404
6	13 27 30.69	1.7802	8 50 30.6	13.372
7	13 29 17.56	1.7821	9 3 51.9	13.338
8	13 31 4.54	1.7840	9 17 11.1	13.303
9	13 32 51.64	1.7861	9 30 28.2	13.268
10	13 34 38.87	1.7882	9 43 43.2	13.231
11	13 36 26.23	1.7904	9 56 55.9	13.194
12	13 38 13.72	1.7926	10 10 6.4	13.156
13	13 40 1.34	1.7948	10 23 14.6	13.118
14	13 41 49.10	1.7971	10 36 20.5	13.080
15	13 43 37.00	1.7995	10 49 24.1	13.041
16	13 45 25.04	1.8019	11 2 25.3	13.000
17	13 47 13.23	1.8045	11 15 24.0	12.958
18	13 49 1.58	1.8071	11 28 20.2	12.915
19	13 50 50.09	1.8097	11 41 13.8	12.872
20	13 52 38.75	1.8123	11 54 4.8	12.829
21	13 54 27.57	1.8151	12 6 53.2	12.785
22	13 56 16.56	1.8179	12 19 39.0	12.740
23	13 58 5.72	1.8208	S. 12 32 22.0	12.693
	MONDAY 14.			
0	13 59 55.06	1.8238	S. 12 45 2.2	12.646
1	14 1 44.58	1.8268	12 57 39.6	12.599
2	14 3 34.28	1.8298	13 10 14.1	12.551
3	14 5 24.16	1.8328	13 22 45.7	12.502
4	14 7 14.22	1.8360	13 35 14.3	12.452
5	14 9 4.48	1.8394	13 47 39.9	12.402
6	14 10 54.95	1.8428	14 0 2.5	12.351
7	14 12 45.62	1.8461	14 12 22.0	12.298
8	14 14 36.48	1.8494	14 24 38.3	12.245
9	14 16 27.54	1.8528	14 36 51.4	12.192
10	14 18 18.81	1.8564	14 49 1.3	12.137
11	14 20 10.31	1.8601	15 1 7.8	12.081
12	14 22 2.03	1.8638	15 13 11.0	12.025
13	14 23 53.97	1.8674	15 25 10.8	11.968
14	14 25 46.12	1.8710	15 37 7.2	11.910
15	14 27 38.49	1.8748	15 49 0.1	11.851
16	14 29 31.09	1.8788	16 0 49.4	11.791
17	14 31 23.94	1.8828	16 12 35.1	11.731
18	14 33 17.03	1.8868	16 24 17.2	11.670
19	14 35 10.36	1.8908	16 35 55.6	11.608
20	14 37 3.92	1.8947	16 47 30.2	11.545
21	14 38 57.72	1.8988	16 59 1.1	11.482
22	14 40 51.78	1.9030	17 10 28.1	11.417
23	14 42 46.09	1.9072	17 21 51.2	11.352
24	14 44 40.65	1.9115	S. 17 33 10.4	11.286

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 15.			
	h m s	s	° ′ ″	″
0	14 44 40.65	1.9115	S. 17 33 10.4	11.286
1	14 46 35.47	1.9158	17 44 25.6	11.219
2	14 48 30.55	1.9203	17 55 36.7	11.151
3	14 50 25.90	1.9248	18 6 43.7	11.083
4	14 52 21.52	1.9293	18 17 46.6	11.014
5	14 54 17.41	1.9337	18 28 45.3	10.943
6	14 56 13.56	1.9383	18 39 39.7	10.871
7	14 58 9.98	1.9429	18 50 29.8	10.798
8	15 0 6.69	1.9476	19 1 15.5	10.725
9	15 2 3.69	1.9523	19 11 56.9	10.652
10	15 4 0.97	1.9570	19 22 33.8	10.577
11	15 5 58.53	1.9617	19 33 6.1	10.501
12	15 7 56.37	1.9664	19 43 33.9	10.424
13	15 9 54.50	1.9714	19 53 57.0	10.346
14	15 11 52.94	1.9765	20 4 15.4	10.268
15	15 13 51.68	1.9814	20 14 29.1	10.190
16	15 15 50.71	1.9863	20 24 38.1	10.109
17	15 17 50.04	1.9913	20 34 42.1	10.027
18	15 19 49.67	1.9964	20 44 41.2	9.945
19	15 21 49.61	2.0015	20 54 35.4	9.862
20	15 23 49.85	2.0066	21 4 24.6	9.778
21	15 25 50.40	2.0118	21 14 8.7	9.693
22	15 27 51.27	2.0171	21 23 47.7	9.606
23	15 29 52.45	2.0223	S. 21 33 21.4	9.519
	WEDNESDAY 16.			
0	15 31 53.94	2.0275	S. 21 42 49.9	9.431
1	15 33 55.75	2.0328	21 52 13.1	9.342
2	15 35 57.88	2.0382	22 1 30.9	9.252
3	15 38 0.33	2.0435	22 10 43.3	9.162
4	15 40 3.10	2.0488	22 19 50.3	9.071
5	15 42 6.19	2.0543	22 28 51.8	8.978
6	15 44 9.61	2.0598	22 37 47.6	8.883
7	15 46 13.36	2.0652	22 46 37.7	8.788
8	15 48 17.43	2.0706	22 55 22.1	8.693
9	15 50 21.83	2.0761	23 4 0.8	8.597
10	15 52 26.56	2.0816	23 12 33.7	8.499
11	15 54 31.62	2.0871	23 21 0.7	8.400
12	15 56 37.01	2.0926	23 29 21.7	8.300
13	15 58 42.73	2.0982	23 37 36.7	8.199
14	16 0 48.79	2.1038	23 45 45.6	8.098
15	16 2 55.18	2.1093	23 53 48.5	7.996
16	16 5 1.91	2.1149	24 1 45.2	7.892
17	16 7 8.97	2.1205	24 9 35.6	7.787
18	16 9 16.37	2.1261	24 17 19.7	7.682
19	16 11 24.10	2.1317	24 24 57.4	7.575
20	16 13 32.17	2.1373	24 32 28.7	7.467
21	16 15 40.58	2.1429	24 39 53.5	7.359
22	16 17 49.32	2.1485	24 47 11.8	7.249
23	16 19 58.40	2.1541	24 54 23.4	7.138
24	16 22 7.81	2.1597	S. 25 1 28.4	7.027

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 22 7.81	2.1597	S.25 1 28.4	7.027
1	16 24 17.56	2.1653	25 8 26.7	6.914
2	16 26 27.64	2.1708	25 15 18.1	6.800
3	16 28 38.06	2.1764	25 22 2.7	6.686
4	16 30 48.81	2.1819	25 28 40.4	6.571
5	16 32 59.89	2.1875	25 35 11.2	6.454
6	16 35 11.31	2.1931	25 41 34.9	6.336
7	16 37 23.06	2.1986	25 47 51.5	6.217
8	16 39 35.14	2.2041	25 54 0.9	6.098
9	16 41 47.55	2.2096	26 0 3.2	5.978
10	16 44 0.29	2.2151	26 5 58.2	5.856
11	16 46 13.36	2.2205	26 11 45.8	5.733
12	16 48 26.75	2.2259	26 17 26.1	5.609
13	16 50 40.46	2.2313	26 22 58.9	5.484
14	16 52 54.50	2.2367	26 28 24.2	5.359
15	16 55 8.86	2.2420	26 33 42.0	5.233
16	16 57 23.54	2.2473	26 38 52.1	5.105
17	16 59 38.53	2.2525	26 43 54.5	4.976
18	17 1 53.84	2.2577	26 48 49.2	4.847
19	17 4 9.46	2.2629	26 53 36.1	4.716
20	17 6 25.39	2.2681	26 58 15.1	4.584
21	17 8 41.63	2.2732	27 2 46.2	4.452
22	17 10 58.17	2.2782	27 7 9.4	4.319
23	17 13 15.01	2.2833	S.27 11 24.5	4.184

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 15 32.16	2.2883	S.27 15 31.5	4.049
1	17 17 49.60	2.2931	27 19 30.4	3.913
2	17 20 7.33	2.2979	27 23 21.1	3.776
3	17 22 25.35	2.3027	27 27 3.5	3.638
4	17 24 43.66	2.3075	27 30 37.6	3.499
5	17 27 2.25	2.3122	27 34 3.3	3.360
6	17 29 21.12	2.3168	27 37 20.7	3.220
7	17 31 40.27	2.3214	27 40 29.6	3.078
8	17 33 59.69	2.3259	27 43 30.0	2.935
9	17 36 19.38	2.3304	27 46 21.8	2.792
10	17 38 39.34	2.3348	27 49 5.0	2.648
11	17 40 59.55	2.3390	27 51 39.5	2.503
12	17 43 20.02	2.3432	27 54 5.3	2.357
13	17 45 40.74	2.3474	27 56 22.3	2.210
14	17 48 1.71	2.3516	27 58 30.5	2.063
15	17 50 22.93	2.3556	28 0 29.9	1.916
16	17 52 44.38	2.3595	28 2 20.4	1.767
17	17 55 6.07	2.3634	28 4 1.9	1.617
18	17 57 27.99	2.3672	28 5 34.4	1.467
19	17 59 50.13	2.3708	28 6 57.9	1.316
20	18 2 12.49	2.3744	28 8 12.3	1.163
21	18 4 35.06	2.3779	28 9 17.5	1.010
22	18 6 57.84	2.3813	28 10 13.6	0.857
23	18 9 20.82	2.3848	28 11 0.4	0.703
24	18 11 44.01	2.3881	S.28 11 38.0	0.549

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 11 44.01	2.3881	S.28 11 38.0	0.549
1	18 14 7.39	2.3912	28 12 6.3	0.394
2	18 16 30.95	2.3942	28 12 25.3	0.239
3	18 18 54.69	2.3972	28 12 35.0	−0.083
4	18 21 18.61	2.4001	28 12 35.3	+0.074
5	18 23 42.70	2.4029	28 12 26.1	0.233
6	18 26 6.96	2.4056	28 12 7.4	0.391
7	18 28 31.37	2.4082	28 11 39.2	0.549
8	18 30 55.94	2.4108	28 11 1.5	0.708
9	18 33 20.66	2.4132	28 10 14.3	0.867
10	18 35 45.52	2.4154	28 9 17.5	1.027
11	18 38 10.51	2.4176	28 8 11.0	1.188
12	18 40 35.64	2.4198	28 6 54.9	1.349
13	18 43 0.89	2.4218	28 5 29.1	1.510
14	18 45 26.26	2.4238	28 3 53.7	1.671
15	18 47 51.75	2.4257	28 2 8.6	1.833
16	18 50 17.34	2.4274	28 0 13.7	1.996
17	18 52 43.03	2.4289	27 58 9.1	2.159
18	18 55 8.81	2.4304	27 55 54.7	2.322
19	18 57 34.68	2.4319	27 53 30.5	2.485
20	19 0 0.64	2.4332	27 50 56.5	2.649
21	19 2 26.67	2.4344	27 48 12.7	2.813
22	19 4 52.77	2.4355	27 45 19.0	2.977
23	19 7 18.93	2.4366	S.27 42 15.5	3.140

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 9 45.16	2.4375	S.27 39 2.2	3.304
1	19 12 11.43	2.4383	27 35 39.0	3.469
2	19 14 37.75	2.4390	27 32 5.9	3.634
3	19 17 4.11	2.4396	27 28 22.9	3.799
4	19 19 30.50	2.4400	27 24 30.0	3.963
5	19 21 56.91	2.4404	27 20 27.3	4.128
6	19 24 23.35	2.4407	27 16 14.7	4.293
7	19 26 49.80	2.4409	27 11 52.2	4.458
8	19 29 16.26	2.4410	27 7 19.8	4.623
9	19 31 42.72	2.4410	27 2 37.5	4.788
10	19 34 9.18	2.4409	26 57 45.3	4.953
11	19 36 35.63	2.4408	26 52 43.2	5.117
12	19 39 2.07	2.4405	26 47 31.3	5.281
13	19 41 28.49	2.4401	26 42 9.5	5.446
14	19 43 54.88	2.4396	26 36 37.8	5.610
15	19 46 21.24	2.4390	26 30 56.3	5.774
16	19 48 47.56	2.4384	26 25 5.0	5.938
17	19 51 13.84	2.4377	26 19 3.8	6.102
18	19 53 40.08	2.4368	26 12 52.8	6.265
19	19 56 6.26	2.4358	26 6 32.1	6.427
20	19 58 32.38	2.4348	26 0 1.6	6.590
21	20 0 58.44	2.4338	25 53 21.3	6.752
22	20 3 24.43	2.4326	25 46 31.3	6.914
23	20 5 50.35	2.4314	25 39 31.6	7.076
24	20 8 16.20	2.4301	S.25 32 22.2	7.237

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 8 16.20	2.4301	S.25 32 22.2	7.237	0	22 2 19.00	2.3103	S.16 52 41.5	14.044
1	20 10 41.96	2.4287	25 25 3.2	7.398	1	22 4 37.53	2.3075	16 38 35.4	14.159
2	20 13 7.63	2.4272	25 17 34.5	7.559	2	22 6 55.89	2.3047	16 24 22.4	14.272
3	20 15 33.22	2.4257	25 9 56.2	7.718	3	22 9 14.09	2.3019	16 10 2.7	14.383
4	20 17 58.71	2.4240	25 2 8.4	7.877	4	22 11 32.12	2.2992	15 55 36.4	14.492
5	20 20 24.09	2.4222	24 54 11.0	8.036	5	22 13 49.99	2.2964	15 41 3.6	14.601
6	20 22 49.37	2.4204	24 46 4.1	8.194	6	22 16 7.69	2.2937	15 26 24.2	14.709
7	20 25 14.54	2.4186	24 37 47.8	8.351	7	22 18 25.23	2.2911	15 11 38.5	14.814
8	20 27 39.60	2.4168	24 29 22.0	8.508	8	22 20 42.62	2.2885	14 56 46.5	14.917
9	20 30 4.55	2.4148	24 20 46.8	8.664	9	22 22 59.85	2.2858	14 41 48.4	15.019
10	20 32 29.37	2.4127	24 12 2.3	8.820	10	22 25 16.92	2.2833	14 26 44.2	15.121
11	20 34 54.07	2.4106	24 3 8.4	8.976	11	22 27 33.84	2.2808	14 11 33.9	15.221
12	20 37 18.64	2.4084	23 54 5.2	9.130	12	22 29 50.61	2.2783	13 56 17.7	15.318
13	20 39 43.08	2.4062	23 44 52.8	9.283	13	22 32 7.23	2.2758	13 40 55.7	15.414
14	20 42 7.39	2.4040	23 35 31.2	9.436	14	22 34 23.70	2.2733	13 25 28.0	15.508
15	20 44 31.56	2.4017	23 26 0.4	9.588	15	22 36 40.03	2.2710	13 9 54.7	15.601
16	20 46 55.59	2.3993	23 16 20.6	9.740	16	22 38 56.22	2.2687	12 54 15.9	15.692
17	20 49 19.47	2.3969	23 6 31.7	9.891	17	22 41 12.27	2.2663	12 38 31.7	15.782
18	20 51 43.21	2.3944	22 56 33.7	10.041	18	22 43 28.19	2.2641	12 22 42.1	15.870
19	20 54 6.80	2.3919	22 46 26.8	10.189	19	22 45 43.97	2.2619	12 6 47.3	15.956
20	20 56 30.24	2.3894	22 36 11.0	10.336	20	22 47 59.62	2.2598	11 50 47.4	16.041
21	20 58 53.53	2.3868	22 25 46.4	10.483	21	22 50 15.15	2.2578	11 34 42.4	16.124
22	21 1 16.66	2.3842	22 15 13.0	10.630	22	22 52 30.55	2.2557	11 18 32.6	16.205
23	21 3 39.63	2.3816	S.22 4 30.8	10.776	23	22 54 45.83	2.2537	S.11 2 17.9	16.285
	TUESDAY 22.					THURSDAY 24.			
0	21 6 2.45	2.3789	S.21 53 39.9	10.920	0	22 57 0.98	2.2517	S.10 45 58.5	16.362
1	21 8 25.10	2.3762	21 42 40.4	11.063	1	22 59 16.02	2.2498	10 29 34.5	16.438
2	21 10 47.59	2.3735	21 31 32.4	11.206	2	23 1 30.95	2.2480	10 13 6.0	16.512
3	21 13 9.92	2.3707	21 20 15.8	11.348	3	23 3 45.78	2.2463	9 56 33.1	16.584
4	21 15 32.07	2.3679	21 8 50.7	11.488	4	23 6 0.50	2.2445	9 39 55.9	16.654
5	21 17 54.06	2.3651	20 57 17.3	11.626	5	23 8 15.12	2.2428	9 23 14.6	16.723
6	21 20 15.88	2.3623	20 45 35.6	11.764	6	23 10 29.64	2.2413	9 6 29.2	16.790
7	21 22 37.53	2.3594	20 33 45.6	11.902	7	23 12 44.07	2.2398	8 49 39.8	16.856
8	21 24 59.01	2.3565	20 21 47.4	12.038	8	23 14 58.41	2.2383	8 32 46.5	16.919
9	21 27 20.31	2.3536	20 9 41.1	12.173	9	23 17 12.66	2.2368	8 15 49.5	16.980
10	21 29 41.44	2.3507	19 57 26.7	12.306	10	23 19 26.83	2.2355	7 58 48.9	17.040
11	21 32 2.40	2.3478	19 45 4.4	12.438	11	23 21 40.92	2.2342	7 41 44.7	17.098
12	21 34 23.18	2.3449	19 32 34.2	12.569	12	23 23 54.93	2.2329	7 24 37.1	17.154
13	21 36 43.79	2.3421	19 19 56.1	12.699	13	23 26 8.87	2.2318	7 7 26.2	17.208
14	21 39 4.23	2.3392	19 7 10.3	12.827	14	23 28 22.75	2.2308	6 50 12.1	17.260
15	21 41 24.49	2.3362	18 54 16.8	12.955	15	23 30 36.57	2.2298	6 32 54.9	17.311
16	21 43 44.57	2.3333	18 41 15.6	13.082	16	23 32 50.33	2.2288	6 15 34.7	17.359
17	21 46 4.48	2.3304	18 28 6.9	13.207	17	23 35 4.03	2.2278	5 58 11.7	17.406
18	21 48 24.22	2.3275	18 14 50.7	13.330	18	23 37 17.67	2.2270	5 40 45.9	17.451
19	21 50 43.78	2.3246	18 1 27.2	13.453	19	23 39 31.27	2.2263	5 23 17.5	17.494
20	21 53 3.17	2.3217	17 47 56.3	13.575	20	23 41 44.83	2.2258	5 5 46.6	17.535
21	21 55 22.39	2.3188	17 34 18.2	13.694	21	23 43 58.36	2.2253	4 48 13.3	17.574
22	21 57 41.43	2.3159	17 20 33.0	13.812	22	23 46 11.86	2.2247	4 30 37.7	17.611
23	22 0 0.30	2.3131	17 6 40.7	13.929	23	23 48 25.32	2.2241	4 13 0.0	17.645
24	22 2 19.00	2.3103	S.16 52 41.5	14.044	24	23 50 38.75	2.2237	S. 3 55 20.3	17.678

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 25.					**SUNDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 50 38.75	2.2237	S. 3 55 20.3	17.678	0	1 38 24.45	2.2951	N.10 12 55.6	16.875
1	23 52 52.16	2.2234	3 37 38.6	17.710	1	1 40 42.25	2.2983	10 29 46.1	16.808
2	23 55 5.56	2.2233	3 19 55.1	17.740	2	1 43 0.25	2.3017	10 46 32.5	16.738
3	23 57 18.96	2.2233	3 2 9.9	17.768	3	1 45 18.46	2.3051	11 3 14.6	16.666
4	23 59 32.35	2.2231	2 44 23.1	17.793	4	1 47 36.87	2.3085	11 19 52.4	16.593
5	0 1 45.73	2.2230	2 26 34.9	17.816	5	1 49 55.48	2.3119	11 36 25.7	16.518
6	0 3 59.11	2.2231	2 8 45.3	17.837	6	1 52 14.29	2.3153	11 52 54.5	16.441
7	0 6 12.50	2.2233	1 50 54.5	17.856	7	1 54 33.31	2.3189	12 9 18.6	16.361
8	0 8 25.90	2.2235	1 33 2.6	17.873	8	1 56 52.56	2.3227	12 25 37.8	16.279
9	0 10 39.32	2.2238	1 15 9.8	17.887	9	1 59 12.04	2.3265	12 41 52.1	16.196
10	0 12 52.76	2.2242	0 57 16.2	17.900	10	2 1 31.74	2.3301	12 58 1.3	16.111
11	0 15 6.23	2.2247	0 39 21.8	17.912	11	2 3 51.65	2.3337	13 14 5.3	16.024
12	0 17 19.72	2.2251	0 21 26.8	17.921	12	2 6 11.78	2.3375	13 30 4.1	15.935
13	0 19 33.24	2.2258	S. 0 3 31.3	17.928	13	2 8 32.14	2.3415	13 45 57.4	15.843
14	0 21 46.81	2.2266	N. 0 14 24.5	17.933	14	2 10 52.75	2.3455	14 1 45.2	15.749
15	0 24 0.43	2.2274	0 32 20.6	17.936	15	2 13 13.60	2.3494	14 17 27.3	15.653
16	0 26 14.10	2.2282	0 50 16.8	17.937	16	2 15 34.68	2.3533	14 33 3.6	15.556
17	0 28 27.81	2.2291	1 8 13.0	17.936	17	2 17 56.00	2.3573	14 48 34.1	15.458
18	0 30 41.58	2.2300	1 26 9.1	17.933	18	2 20 17.56	2.3614	15 3 58.6	15.357
19	0 32 55.41	2.2312	1 44 4.9	17.927	19	2 22 39.37	2.3655	15 19 17.0	15.254
20	0 35 9.32	2.2324	2 2 0.3	17.920	20	2 25 1.42	2.3696	15 34 29.1	15.149
21	0 37 23.30	2.2336	2 19 55.3	17.911	21	2 27 23.72	2.3737	15 49 34.9	15.043
22	0 39 37.35	2.2348	2 37 49.6	17.899	22	2 29 46.27	2.3779	16 4 34.3	14.935
23	0 41 51.48	2.2362	N. 2 55 43.1	17.886	23	2 32 9.07	2.3822	N.16 19 27.1	14.824
	SATURDAY 26.					**MONDAY 28.**			
0	0 44 5.70	2.2378	N. 3 13 35.8	17.871	0	2 34 32.13	2.3864	N.16 34 13.2	14.711
1	0 46 20.02	2.2394	3 31 27.5	17.853	1	2 36 55.44	2.3906	16 48 52.5	14.598
2	0 48 34.43	2.2410	3 49 18.1	17.833	2	2 39 19.01	2.3949	17 3 25.0	14.483
3	0 50 48.93	2.2426	4 7 7.4	17.811	3	2 41 42.83	2.3992	17 17 50.5	14.366
4	0 53 3.54	2.2444	4 24 55.4	17.787	4	2 44 6.91	2.4035	17 32 8.9	14.246
5	0 55 18.26	2.2463	4 42 41.8	17.761	5	2 46 31.25	2.4078	17 46 20.0	14.124
6	0 57 33.09	2.2482	5 0 26.6	17.734	6	2 48 55.85	2.4122	18 0 23.8	14.002
7	0 59 48.04	2.2502	5 18 9.8	17.704	7	2 51 20.71	2.4165	18 14 20.2	13.878
8	1 2 3.11	2.2523	5 35 51.1	17.671	8	2 53 45.83	2.4208	18 28 9.1	13.751
9	1 4 18.31	2.2545	5 53 30.3	17.637	9	2 56 11.21	2.4252	18 41 50.3	13.622
10	1 6 33.65	2.2567	6 11 7.4	17.601	10	2 58 36.85	2.4295	18 55 23.8	13.493
11	1 8 49.12	2.2589	6 28 42.3	17.562	11	3 1 2.75	2.4338	19 8 49.5	13.362
12	1 11 4.72	2.2612	6 46 14.8	17.522	12	3 3 28.91	2.4382	19 22 7.3	13.229
13	1 13 20.46	2.2637	7 3 44.9	17.479	13	3 5 55.33	2.4425	19 35 17.0	13.094
14	1 15 36.36	2.2663	7 21 12.3	17.434	14	3 8 22.01	2.4468	19 48 18.6	12.958
15	1 17 52.42	2.2690	7 38 37.0	17.387	15	3 10 48.94	2.4511	20 1 12.0	12.821
16	1 20 8.64	2.2716	7 55 58.8	17.338	16	3 13 16.14	2.4554	20 13 57.1	12.681
17	1 22 25.01	2.2742	8 13 17.6	17.288	17	3 15 43.59	2.4597	20 26 33.7	12.539
18	1 24 41.54	2.2769	8 30 33.4	17.235	18	3 18 11.30	2.4639	20 39 1.8	12.397
19	1 26 58.24	2.2798	8 47 45.9	17.180	19	3 20 39.26	2.1681	20 51 21.3	12.253
20	1 29 15.12	2.2828	9 4 55.0	17.123	20	3 23 7.47	2.4723	21 3 32.1	12.108
21	1 31 32.18	2.2858	9 22 0.7	17.064	21	3 25 35.94	2.4765	21 15 34.2	11.961
22	1 33 49.42	2.2888	9 39 2.8	17.003	22	3 28 4.66	2.4807	21 27 27.4	11.812
23	1 36 6.84	2.2919	9 56 1.1	16.940	23	3 30 33.62	2.4848	21 39 11.6	11.661
24	1 38 24.45	2.2951	N.10 12 55.6	16.875	24	3 33 2.83	2.4888	N.21 50 46.7	11.509

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 29.					WEDNESDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 33 2.83	2.4888	N.21 50 46.7	11.509	0	4 33 48.71	2.5677	N.25 40 23.2	7.521
1	3 35 32.28	2.4928	22 2 12.7	11.357	1	4 36 22.84	2.5700	25 47 49.2	7.343
2	3 38 1.97	2.4968	22 13 29.6	11.204	2	4 38 57.10	2.5722	25 55 4.4	7.164
3	3 40 31.89	2.5007	22 24 37.2	11.049	3	4 41 31.50	2.5742	26 2 8.9	6.985
4	3 43 2.06	2.5046	22 35 35.4	10.891	4	4 44 6.01	2.5760	26 9 2.7	6.805
5	3 45 32.46	2.5085	22 46 24.1	10.733	5	4 46 40.62	2.5777	26 15 45.6	6.624
6	3 48 3.08	2.5123	22 57 3.3	10.574	6	4 49 15.34	2.5794	26 22 17.7	6.444
7	3 50 33.93	2.5160	23 7 32.9	10.413	7	4 51 50.15	2.5809	26 28 39.0	6.263
8	3 53 5.00	2.5196	23 17 52.8	10.251	8	4 54 25.05	2.5824	26 34 49.3	6.081
9	3 55 36.28	2.5232	23 28 3.0	10.088	9	4 57 0.03	2.5837	26 40 48.7	5.899
10	3 58 7.78	2.5268	23 38 3.4	9.924	10	4 59 35.09	2.5848	26 46 37.1	5.716
11	4 0 39.49	2.5303	23 47 53.9	9.759	11	5 2 10.21	2.5859	26 52 14.6	5.533
12	4 3 11.41	2.5337	23 57 34.5	9.593	12	5 4 45.40	2.5869	26 57 41.1	5.349
13	4 5 43.53	2.5370	24 7 5.1	9.425	13	5 7 20.64	2.5877	27 2 56.5	5.165
14	4 8 15.84	2.5402	24 16 25.5	9.256	14	5 9 55.92	2.5883	27 8 0.9	4.981
15	4 10 48.35	2.5434	24 25 35.8	9.087	15	5 12 31.24	2.5888	27 12 54.3	4.797
16	4 13 21.05	2.5465	24 34 35.9	8.917	16	5 15 6.58	2.5892	27 17 36.6	4.612
17	4 15 53.93	2.5494	24 43 25.8	8.746	17	5 17 41.94	2.5894	27 22 7.8	4.427
18	4 18 26.98	2.5523	24 52 5.4	8.573	18	5 20 17.31	2.5896	27 26 27.9	4.242
19	4 21 0.21	2.5551	25 0 34.6	8.399	19	5 22 52.69	2.5896	27 30 36.9	4.058
20	4 23 33.60	2.5578	25 8 53.3	8.225	20	5 25 28.06	2.5894	27 34 34.8	3.873
21	4 26 7.15	2.5605	25 17 1.6	8.051	21	5 28 3.42	2.5892	27 38 21.7	3.688
22	4 28 40.86	2.5630	25 24 59.4	7.875	22	5 30 38.76	2.5888	27 41 57.4	3.503
23	4 31 14.71	2.5654	25 32 46.6	7.698	23	5 33 14.07	2.5882	27 45 22.1	3.318
24	4 33 48.71	2.5677	N.25 40 23.2	7.521	24	5 35 49.34	2.5875	N.27 48 35.7	3.133

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, ...	2	16	54.6
● New Moon, ...	10	6	10.5
☽ First Quarter, ...	18	11	4.8
○ Full Moon, ...	25	10	6.7

	d	h
☾ Apogee, ...	13	17.4
☾ Perigee, ...	26	6.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
1	α Aquilæ	W.	103° 31′ 48″	3151	104° 58′ 56″	3178	106° 25′ 32″	3206	107° 51′ 34″	3237
	Saturn	W.	97 36 9	2240	99 23 37	2251	101 10 48	2263	102 57 42	2274
	Fomalhaut	W.	76 8 27	2448	77 50 54	2456	79 33 9	2465	81 15 12	2475
	α Pegasi	W.	56 25 40	2745	58 1 20	2737	59 37 11	2732	61 13 9	2727
	Pollux	E.	64 54 39	2249	63 7 24	2260	61 20 25	2271	59 33 43	2283
	Sun	E.	112 16 29	2564	110 36 44	2574	108 57 14	2586	107 18 0	2599
2	Fomalhaut	W.	89 41 49	2530	91 22 21	2542	93 2 36	2555	94 42 33	2567
	α Pegasi	W.	69 13 41	2729	70 49 43	2733	72 25 39	2738	74 1 29	2744
	α Arietis	W.	25 37 30	2636	27 15 36	2615	28 54 10	2601	30 33 4	2591
	Pollux	E.	50 44 30	2342	48 59 32	2354	47 14 51	2366	45 30 28	2379
	Sun	E.	99 6 3	2661	97 28 31	2674	95 51 16	2687	94 14 18	2699
3	Fomalhaut	W.	102 57 43	2639	104 35 45	2653	106 13 28	2669	107 50 50	2685
	α Pegasi	W.	81 58 28	2782	83 33 19	2792	85 7 58	2802	86 42 23	2813
	α Arietis	W.	38 49 52	2577	40 29 19	2579	42 8 43	2583	43 48 2	2588
	Pollux	E.	36 52 58	2441	35 10 21	2453	33 28 2	2465	31 46 0	2478
	Sun	E.	86 13 47	2764	84 38 32	2777	83 3 34	2790	81 28 53	2803
4	α Pegasi	W.	94 30 47	2873	96 3 40	2887	97 36 15	2901	99 8 32	2916
	α Arietis	W.	52 2 43	2619	53 41 12	2627	55 19 30	2635	56 57 37	2643
	Aldebaran	W.	22 24 15	2885	23 56 53	2853	25 30 12	2828	27 4 3	2810
	Sun	E.	73 39 38	2866	72 6 36	2878	70 33 49	2891	69 1 18	2903
5	α Pegasi	W	106 45 14	2995	108 15 33	3013	109 45 30	3031	111 15 4	3050
	α Arietis	W.	65 5 27	2686	66 42 26	2695	68 19 13	2704	69 55 48	2713
	Aldebaran	W.	34 57 33	2772	36 32 37	2771	38 7 43	2772	39 42 48	2773
	Sun	E.	61 22 35	2962	59 51 35	2974	58 20 50	2985	56 50 19	2997
6	α Arietis	W.	77 55 47	2757	79 31 11	2766	81 6 24	2775	82 41 25	2783
	Aldebaran	W.	47 37 23	2792	49 12 2	2797	50 46 34	2802	52 20 59	2808
	Sun	E.	49 21 15	3052	47 52 7	3064	46 23 13	3074	44 54 32	3085
7	α Arietis	W.	90 33 37	2828	92 7 29	2836	93 41 10	2845	95 14 40	2854
	Aldebaran	W.	60 11 8	2839	61 44 45	2845	63 18 14	2852	64 51 34	2859
	Pollux	W.	15 53 34	2793	17 28 11	2798	19 2 42	2803	20 37 6	2808
	Sun	E.	37 34 22	3138	36 6 59	3149	34 39 49	3160	33 12 52	3171
12	Sun	W.	19 16 30	3473	20 37 24	3471	21 58 21	3468	23 19 21	3467
	Antares	E.	59 33 11	3042	58 3 50	3046	56 34 34	3050	55 5 23	3053
	α Aquilæ	E.	107 36 4	3978	106 24 3	3967	105 11 51	3958	103 59 30	3951
	Saturn	E.	119 40 9	3039	118 10 44	3043	116 41 24	3046	115 12 8	3050
13	Sun	W.	30 4 29	3468	31 25 29	3468	32 46 29	3469	34 7 28	3469
	Antares	E.	47 40 32	3069	46 11 45	3072	44 43 1	3074	43 14 20	3076
	α Aquilæ	E.	97 56 9	3925	96 43 15	3922	95 30 18	3920	94 17 19	3919
	Saturn	E.	107 46 50	3065	106 17 57	3066	104 49 6	3068	103 20 17	3070
14	Sun	W.	40 52 20	3469	42 13 19	3468	43 34 19	3467	44 55 20	3466
	Antares	E.	35 51 24	3082	34 22 52	3082	32 54 21	3082	31 25 50	3082
	α Aquilæ	E.	88 12 15	3922	86 59 18	3924	85 46 23	3927	84 33 31	3931
	Saturn	E.	95 56 43	3075	94 28 3	3075	92 59 23	3075	91 30 43	3075
	Fomalhaut	E.	117 22 58	3320	115 59 10	3314	114 35 15	3308	113 11 13	3303
15	Sun	W.	51 40 53	3454	53 2 8	3451	54 23 27	3447	55 44 50	3444

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Aquilæ	W.	109° 16′ 59″	3270	110° 41′ 45″	3305	112° 5′ 51″	3342	113° 29′ 14″	3380
	Saturn	W.	104 44 19	2286	106 30 39	2298	108 16 41	2311	110 2 25	2322
	Fomalhaut	W.	82 57 1	2485	84 38 36	2495	86 19 56	2506	88 1 1	2518
	α Pegasi	W.	62 49 13	2725	64 25 20	2724	66 1 28	2724	67 37 36	2726
	Pollux	E.	57 47 18	2294	56 1 10	2306	54 15 19	2318	52 29 46	2330
	Sun	E.	105 39 3	2611	104 0 23	2623	102 21 59	2635	100 43 52	2649
2	Fomalhaut	W.	96 22 13	2580	98 1 35	2594	99 40 38	2609	101 19 21	2624
	α Pegasi	W.	75 37 11	2750	77 12 45	2756	78 48 10	2764	80 23 25	2773
	α Arietis	W.	32 12 12	2583	33 51 30	2578	35 30 55	2576	37 10 23	2575
	Pollux	E.	43 46 23	2391	42 2 35	2403	40 19 5	2416	38 35 53	2428
	Sun	E.	92 37 37	2713	91 1 14	2725	89 25 8	2738	87 49 19	2751
3	Fomalhaut	W.	109 27 50	2701	111 4 28	2718	112 40 44	2735	114 16 37	2753
	α Pegasi	W.	88 16 34	2825	89 50 30	2836	91 24 11	2848	92 57 37	2860
	α Arietis	W.	45 27 14	2593	47 6 19	2599	48 45 16	2605	50 24 4	2612
	Pollux	E.	30 4 16	2490	28 22 49	2503	26 41 40	2515	25 0 48	2528
	Sun	E.	79 54 29	2816	78 20 22	2828	76 46 31	2841	75 12 56	2854
4	α Pegasi	W.	100 40 31	2931	102 12 11	2946	103 43 32	2962	105 14 33	2977
	α Arietis	W.	58 35 34	2651	60 13 20	2660	61 50 54	2669	63 28 16	2677
	Aldebaran	W.	28 38 18	2796	30 12 51	2786	31 47 37	2779	33 22 32	2775
	Sun	E.	67 29 3	2915	65 57 3	2927	64 25 19	2939	62 53 50	2950
5	α Pegasi	W.	112 44 15	3069	114 13 2	3091	115 41 23	3112	117 9 18	3135
	α Arietis	W.	71 32 11	2721	73 8 23	2730	74 44 23	2739	76 20 11	2748
	Aldebaran	W.	41 17 51	2775	42 52 51	2779	44 27 47	2782	46 2 38	2787
	Sun	E.	55 20 2	3009	53 50 0	3019	52 20 11	3030	50 50 36	3042
6	α Arietis	W.	84 16 15	2792	85 50 53	2801	87 25 19	2810	88 59 34	2819
	Aldebaran	W.	53 55 17	2814	55 29 27	2820	57 3 29	2826	58 37 23	2833
	Sun	E.	43 26 4	3096	41 57 49	3106	40 29 47	3117	39 1 58	3128
7	α Arietis	W.	96 47 58	2862	98 21 5	2871	99 54 1	2880	101 26 46	2887
	Aldebaran	W.	66 24 45	2866	67 57 47	2873	69 30 41	2880	71 3 26	2887
	Pollux	W.	22 11 23	2815	23 45 31	2822	25 19 30	2830	26 53 19	2837
	Sun	E.	31 46 8	3183	30 19 38	3193	28 53 21	3205	27 27 18	3216
12	Sun	W.	24 40 22	3466	26 1 24	3466	27 22 26	3466	28 43 28	3467
	Antares	E.	53 36 16	3057	52 7 14	3060	50 38 16	3064	49 9 22	3067
	α Aquilæ	E.	102 47 2	3944	101 34 27	3938	100 21 46	3933	99 9 0	3928
	Saturn	E.	113 42 57	3053	112 13 50	3056	110 44 46	3059	109 15 46	3062
13	Sun	W.	35 28 27	3470	36 49 25	3470	38 10 23	3470	39 31 21	3469
	Saturn	E.	41 45 41	3078	40 17 4	3080	38 48 30	3081	37 19 57	3081
	α Aquilæ	E.	93 4 18	3919	91 51 17	3918	90 38 15	3919	80 25 14	3920
	Saturn	E.	101 51 31	3072	100 22 47	3073	98 54 5	3074	97 25 24	3074
14	Sun	W.	46 16 22	3464	47 37 26	3462	48 58 33	3460	50 19 42	3458
	Antares	E.	29 57 18	3081	28 28 45	3081	27 0 12	3079	25 31 37	3078
	α Aquilæ	E.	83 20 43	3935	82 7 59	3940	80 55 20	3946	79 42 47	3953
	Saturn	E.	90 2 3	3074	88 33 22	3073	87 4 39	3071	85 35 54	3069
	Fomalhaut	E.	111 47 5	3298	110 22 51	3292	108 58 30	3287	107 34 3	3282
15	Sun	W.	57 6 17	3438	58 27 50	3434	59 49 28	3429	61 11 12	3423

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	α Aquilæ	E.	78° 30′ 21″	3960	77° 18′ 2″	3967	76° 5′ 50″	3976	74° 53′ 47″	3986
	Saturn	E.	84 7 7	3067	82 38 17	3065	81 9 24	3062	79 40 28	3059
	Fomalhaut	E.	106 9 30	3276	104 44 51	3270	103 20 5	3265	101 55 12	3259
16	Sun	W.	62 33 3	3416	63 55 1	3410	65 17 6	3403	66 39 19	3395
	Venus	W.	16 25 52	3451	17 47 11	3443	19 8 39	3435	20 30 16	3426
	α Aquilæ	E.	68 56 13	4048	67 45 21	4065	66 34 45	4082	65 24 26	4101
	Saturn	E.	72 14 37	3036	70 45 9	3031	69 15 35	3026	67 45 54	3019
	Fomalhaut	E.	94 49 7	3229	93 23 32	3223	91 57 50	3216	90 32 0	3209
	α Pegasi	E.	115 8 5	3455	113 46 51	3440	112 25 20	3425	111 3 32	3411
17	Sun	W.	73 32 45	3351	74 55 58	3340	76 19 23	3330	77 43 0	3319
	Venus	W.	27 20 57	3378	28 43 39	3366	30 6 34	3356	31 29 41	3344
	α Aquilæ	E.	59 38 1	4226	58 29 59	4259	57 22 28	4294	56 15 30	4332
	Saturn	E.	60 15 18	2981	58 44 42	2973	57 13 55	2963	55 42 56	2954
	Fomalhaut	E.	83 20 42	3173	81 54 0	3164	80 27 8	3157	79 0 7	3148
	α Pegasi	E.	104 10 29	3340	102 47 4	3327	101 23 24	3313	99 59 28	3300
18	Sun	W.	84 44 30	3256	86 9 33	3242	87 34 53	3228	89 0 29	3213
	Venus	W.	38 28 51	3279	39 53 27	3265	41 18 20	3250	42 43 30	3236
	Saturn	E.	48 4 54	2901	46 32 37	2890	45 0 5	2878	43 27 18	2866
	α Aquilæ	E.	50 50 39	4592	49 48 7	4660	48 46 34	4735	47 46 4	4820
	Fomalhaut	E.	71 42 30	3106	70 14 28	3097	68 46 15	3089	67 17 52	3080
	α Pegasi	E.	92 55 54	3233	91 30 24	3220	90 4 39	3207	88 38 38	3194
19	Sun	W.	96 13 3	3133	97 40 32	3117	99 8 21	3100	100 36 31	3083
	Venus	W.	49 53 57	3153	51 21 2	3136	52 48 28	3118	54 16 16	3101
	Antares	W.	24 30 11	2785	26 4 58	2769	27 40 7	2753	29 15 37	2735
	Saturn	E.	35 39 28	2804	34 5 5	2792	32 30 27	2780	30 55 33	2768
	Fomalhaut	E.	59 53 26	3042	58 24 5	3035	56 54 36	3030	55 25 0	3024
	α Pegasi	E.	81 24 42	3130	79 57 9	3118	78 29 21	3106	77 1 19	3095
20	Sun	W.	108 2 57	2989	109 33 24	2969	111 4 15	2950	112 35 30	2931
	Venus	W.	61 40 52	3005	63 10 58	2986	64 41 28	2966	66 12 23	2946
	Antares	W.	37 18 49	2649	38 56 38	2631	40 34 51	2612	42 13 29	2594
	Fomalhaut	E.	47 55 43	3014	46 25 47	3016	44 55 54	3021	43 26 7	3029
	α Pegasi	E.	69 37 44	3042	68 8 23	3033	66 38 51	3026	65 9 10	3018
	α Arietis	E.	110 59 43	2710	109 23 16	2690	107 46 23	2671	106 9 4	2652
21	Sun	W.	120 18 7	2830	121 51 56	2810	123 26 11	2789	125 0 53	2769
	Venus	W.	73 53 23	2844	75 26 54	2823	77 0 52	2802	78 35 17	2782
	Antares	W.	50 33 2	2500	52 14 15	2481	53 55 55	2462	55 38 1	2443
	Fomalhaut	E.	36 1 1	3126	34 33 23	3163	33 6 30	3209	31 40 32	3267
	α Pegasi	E.	57 39 0	3001	56 8 49	3002	54 38 39	3005	53 8 33	3012
	α Arietis	E.	97 55 57	2555	96 16 0	2536	94 35 37	2517	92 54 47	2497
22	Venus	W.	86 34 8	2679	88 11 16	2660	89 48 50	2640	91 26 51	2620
	Antares	W.	64 15 15	2350	66 0 2	2331	67 45 16	2313	69 30 57	2295
	α Pegasi	E.	45 41 15	3093	44 12 57	3123	42 45 15	3159	41 18 17	3204
	α Arietis	E.	84 23 57	2404	82 40 28	2387	80 56 34	2368	79 12 14	2352
	Aldebaran	E.	114 45 47	2412	113 2 30	2391	111 18 43	2372	109 34 28	2353
23	Venus	W.	99 43 29	2527	101 24 5	2510	103 5 5	2493	104 46 28	2477
	Antares	W.	78 25 48	2210	80 14 1	2194	82 2 38	2178	83 51 39	2163

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	α Aquilæ	E.	73° 41′ 54″	3997	72° 30′ 11″	4008	71° 18′ 39″	4020	70° 7′ 19″	4034
	Saturn	E.	78 11 28	3055	76 42 23	3051	75 13 13	3047	73 43 58	3042
	Fomalhaut	E.	100 30 13	3253	99 5 7	3247	97 39 54	3242	96 14 34	3236
16	Sun	W.	68 1 41	3387	69 24 12	3379	70 46 53	3370	72 9 44	3361
	Venus	W.	21 52 3	3417	23 14 0	3408	24 36 8	3398	25 58 27	3388
	α Aquilæ	E.	64 14 25	4121	63 4 44	4145	61 55 26	4169	60 46 31	4196
	Saturn	E.	66 16 5	3013	64 46 8	3005	63 16 1	2997	61 45 44	2989
	Fomalhaut	E.	89 6 2	3202	87 39 55	3194	86 13 39	3188	84 47 15	3180
	α Pegasi	E.	109 41 28	3397	108 19 8	3382	106 56 31	3368	105 33 38	3354
17	Sun	W.	79 6 50	3306	80 30 54	3295	81 55 11	3282	83 19 43	3270
	Venus	W.	32 53 2	3332	34 16 37	3319	35 40 26	3306	37 4 31	3293
	α Aquilæ	E.	55 9 7	4375	54 3 23	4421	52 58 21	4473	51 54 5	4530
	Saturn	E.	54 11 45	2944	52 40 22	2934	51 8 46	2924	49 36 57	2912
	Fomalhaut	E.	77 32 56	3140	76 5 35	3132	74 38 4	3123	73 10 22	3114
	α Pegasi	E.	98 35 16	3287	97 10 49	3273	95 46 6	3260	94 21 8	3247
18	Sun	W.	90 26 23	3198	91 52 35	3183	93 19 5	3167	94 45 54	3150
	Venus	W.	44 8 57	3220	45 34 42	3204	47 0 47	3187	48 27 12	3170
	Saturn	E.	41 54 16	2854	40 20 58	2842	38 47 24	2829	37 13 34	2817
	α Aquilæ	E.	46 46 44	4912	45 48 39	5016	44 51 56	5132	43 56 43	5260
	Fomalhaut	E.	65 49 18	3072	64 20 34	3065	62 51 41	3056	61 22 38	3049
	α Pegasi	E.	87 12 22	3181	85 45 50	3168	84 19 3	3155	82 52 0	3143
19	Sun	W.	102 5 3	3064	103 33 57	3045	105 3 14	3026	106 32 54	3008
	Venus	W.	55 44 25	3082	57 12 57	3063	58 41 52	3044	60 11 10	3025
	Antares	W.	30 51 30	2719	32 27 45	2701	34 4 28	2684	35 41 24	2666
	Saturn	E.	29 20 23	2756	27 44 58	2746	26 9 19	2735	24 33 26	2725
	Fomalhaut	E.	53 55 17	3020	52 25 29	3016	50 55 36	3014	49 25 40	3013
	α Pegasi	E.	75 33 3	3083	74 4 33	3072	72 35 49	3062	71 6 53	3052
20	Sun	W.	114 7 10	2910	115 39 16	2891	117 11 47	2870	118 44 44	2850
	Venus	W.	67 43 43	2926	69 15 29	2905	70 47 41	2885	72 20 19	2865
	Antares	W.	43 52 32	2575	45 32 1	2557	47 11 55	2538	48 52 15	2519
	Fomalhaut	E.	41 56 30	3039	40 27 5	3054	38 57 59	3072	37 29 15	3096
	α Pegasi	E.	63 39 20	3012	62 9 22	3007	60 39 18	3004	59 9 10	3002
	α Arietis	E.	104 31 19	2632	102 53 8	2613	101 14 31	2593	99 35 27	2574
21	Sun	W.	126 36 1	2749	128 11 36	2729	129 47 37	2709	131 24 5	2689
	Venus	W.	80 10 9	2761	81 45 28	2741	83 21 14	2720	84 57 27	2699
	Antares	W.	57 20 34	2424	59 3 34	2405	60 47 1	2387	62 30 55	2368
	Fomalhaut	E.	30 15 42	3338	28 52 14	3426	27 30 27	3535	26 10 41	3669
	α Pegasi	E.	51 38 35	3021	50 8 48	3033	48 39 16	3048	47 10 3	3069
	α Arietis	E.	91 13 30	2478	89 31 46	2460	87 49 36	2441	86 7 0	2422
22	Venus	W.	93 5 19	2601	94 44 13	2582	96 23 33	2564	98 3 18	2545
	Antares	W.	71 17 4	2277	73 3 37	2260	74 50 35	2243	76 37 59	2226
	α Pegasi	E.	39 52 13	3257	38 27 11	3319	37 3 22	3394	35 40 59	3484
	α Arietis	E.	77 27 30	2335	75 42 21	2316	73 56 48	2302	72 10 52	2287
	Aldebaran	E.	107 49 45	2334	106 4 35	2315	104 18 58	2298	102 32 55	2281
23	Venus	W.	106 28 14	2460	108 10 23	2445	109 52 54	2429	111 35 47	2415
	Antares	W.	85 41 3	2148	87 30 49	2134	89 20 57	2120	91 11 25	2107

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	α Aquilæ	W.	42° 28′ 22″	4764	43° 28′ 28″	4577	44° 31′ 13″	4406	45° 36′ 29″	4250
	Saturn	W.	19 5 56	2301	20 51 54	2272	22 38 35	2245	24 25 56	2219
	α Arietis	E.	70 24 33	2272	68 37 52	2257	66 50 49	2243	65 3 26	2231
	Aldebaran	E.	100 46 27	2264	98 59 34	2247	97 12 16	2230	95 24 33	2214
24	Antares	W.	93 2 13	2095	94 53 20	2083	96 44 46	2072	98 36 29	2061
	α Aquilæ	W.	51 35 36	3663	52 53 3	3574	54 12 6	3493	55 32 38	3420
	Saturn	W.	33 31 6	2122	35 21 31	2107	37 12 19	2094	39 3 28	2081
	α Arietis	E.	56 1 59	2176	54 12 55	2168	52 23 39	2161	50 34 13	2155
	Aldebaran	E.	86 20 32	2147	84 30 44	2136	82 40 39	2124	80 50 17	2115
25	α Aquilæ	W.	62 34 4	3137	64 1 29	3094	65 29 46	3056	66 58 49	3022
	Saturn	W.	48 23 46	2029	50 16 35	2022	52 9 35	2015	54 2 46	2009
	Fomalhaut	W.	29 55 4	2855	31 28 20	2765	33 3 34	2687	34 40 32	2619
	α Arietis	E.	41 25 35	2149	39 35 51	2153	37 46 13	2160	35 56 45	2170
	Aldebaran	E.	71 35 1	2077	69 43 26	2071	67 51 42	2066	65 59 51	2063
	Pollux	E.	115 19 13	2019	113 26 8	2012	111 32 52	2006	109 39 27	2001
26	α Aquilæ	W.	74 33 22	2901	76 5 40	2885	77 38 18	2872	79 11 13	2862
	Saturn	W.	63 30 30	1993	65 24 15	1992	67 18 2	1992	69 11 49	1993
	Fomalhaut	W.	43 4 33	2400	44 48 8	2373	46 32 22	2350	48 17 9	2329
	α Pegasi	W.	28 22 24	4076	29 32 49	3835	30 47 15	3636	32 5 10	3470
	Aldebaran	E.	56 39 57	2063	54 48 1	2066	52 56 10	2072	51 4 27	2077
	Pollux	E.	100 10 45	1987	98 16 50	1987	96 22 55	1987	94 29 0	1988
27	α Aquilæ	W.	86 57 58	2848	88 31 24	2852	90 4 44	2859	91 37 56	2867
	Saturn	W.	78 40 0	2009	80 33 21	2014	82 26 33	2020	84 19 36	2027
	Fomalhaut	W.	57 6 57	2272	58 53 38	2266	60 40 27	2264	62 27 20	2262
	α Pegasi	W.	39 13 48	2941	40 45 15	2877	42 18 3	2822	43 52 2	2775
	Aldebaran	E.	41 48 50	2129	39 58 35	2145	38 8 44	2163	36 19 20	2184
	Pollux	E.	85 0 15	2005	83 6 48	2010	81 13 30	2017	79 20 22	2023
28	α Aquilæ	W.	99 20 17	2942	100 51 42	2964	102 22 40	2988	103 53 8	3014
	Saturn	W.	93 41 47	2071	95 33 31	2082	97 24 58	2094	99 16 7	2105
	Fomalhaut	W.	71 21 37	2276	73 8 12	2282	74 54 38	2289	76 40 53	2298
	α Pegasi	W.	51 54 35	2630	53 32 49	2614	55 11 25	2601	56 50 18	2591
	Aldebaran	E.	27 21 53	2347	25 37 2	2398	23 53 25	2460	22 11 15	2535
	Pollux	E.	69 57 40	2068	68 5 51	2078	66 14 18	2089	64 23 2	2101
	Regulus	E.	106 33 41	2078	104 42 8	2088	102 50 50	2099	100 59 49	2110
29	Saturn	W.	108 27 9	2171	110 16 20	2186	112 5 9	2200	113 53 36	2216
	Fomalhaut	W.	85 28 33	2354	87 13 14	2368	88 57 35	2382	90 41 36	2397
	α Pegasi	W.	65 6 55	2578	66 46 20	2582	68 25 40	2586	70 4 54	2592
	α Arietis	W.	21 29 13	2576	23 8 41	2535	24 49 6	2504	26 30 14	2481
	Pollux	E.	55 11 25	2166	53 22 6	2180	51 33 9	2195	49 44 34	2210
	Regulus	E.	91 49 21	2175	90 0 16	2189	88 11 32	2204	86 23 10	2218
	Sun	E.	129 52 25	2471	128 10 31	2485	126 28 57	2501	124 47 45	2517
30	Fomalhaut	W.	99 16 3	2480	100 57 44	2499	102 38 59	2517	104 19 48	2537
	α Pegasi	W.	78 18 32	2638	79 56 35	2651	81 34 21	2663	83 11 50	2678
	α Arietis	W.	35 1 2	2449	36 43 27	2452	38 25 48	2457	40 8 2	2462
	Pollux	E.	40 47 19	2288	39 1 2	2304	37 15 9	2321	35 29 40	2337
	Regulus	E.	77 26 56	2296	75 40 51	2313	73 55 10	2328	72 9 52	2345
	Sun	E.	116 27 19	2599	114 48 22	2616	113 9 49	2633	111 31 39	2651

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	α Aquilæ	W.	46° 44′ 8″	4110	47° 54′ 0″	3982	49° 5′ 57″	3866	50° 19′ 51″	3759
	Saturn	W.	26 13 55	2196	28 2 28	2175	29 51 33	2157	31 41 6	2139
	α Arietis	E.	63 15 44	2218	61 27 43	2206	59 39 24	2195	57 50 49	2185
	Aldebaran	E.	93 36 27	2200	91 47 59	2186	89 59 10	2172	88 10 1	2159
24	Antares	W.	100 28 29	2050	102 20 45	2041	104 13 15	2033	106 5 58	2025
	α Aquilæ	W.	56 54 32	3352	58 17 43	3290	59 42 6	3234	61 7 35	3183
	Saturn	W.	40 54 57	2068	42 46 45	2057	44 38 50	2047	46 31 11	2038
	α Arietis	E.	48 44 38	2151	46 54 57	2148	45 5 11	2147	43 15 23	2147
	Aldebaran	E.	78 59 40	2105	77 8 48	2096	75 17 43	2089	73 26 27	2083
25	α Aquilæ	W.	68 28 35	2991	69 58 59	2963	71 29 58	2939	73 1 27	2919
	Saturn	W.	55 56 6	2004	57 49 34	2000	59 43 8	1997	61 36 47	1994
	Fomalhaut	W.	36 19 1	2561	37 58 49	2512	39 39 46	2469	41 21 43	2431
	α Arietis	E.	34 7 33	2184	32 18 41	2201	30 30 15	2223	28 42 22	2251
	Aldebaran	E.	64 7 55	2061	62 15 56	2061	60 23 56	2061	58 31 56	2061
	Pollux	E.	107 45 54	1996	105 52 14	1993	103 58 28	1990	102 4 38	1988
26	α Aquilæ	W.	80 44 21	2855	82 17 38	2849	83 51 2	2846	85 24 30	2846
	Saturn	W.	71 5 35	1994	72 59 18	1997	74 52 57	2000	76 46 32	2004
	Fomalhaut	W.	50 2 26	2313	51 48 7	2299	53 34 8	2287	55 20 26	2279
	α Pegasi	W.	33 26 8	3327	34 49 48	3206	36 15 50	3104	37 43 55	3016
	Aldebaran	E.	49 12 53	2085	47 21 30	2093	45 30 20	2103	43 39 26	2115
	Pollux	E.	92 35 7	1990	90 41 17	1993	88 47 31	1996	86 53 50	2000
27	α Aquilæ	W.	93 10 57	2878	94 43 44	2891	96 16 15	2905	97 48 27	2923
	Saturn	W.	86 12 28	2035	88 5 8	2043	89 57 35	2052	91 49 48	2061
	Fomalhaut	W.	64 14 16	2262	66 1 12	2264	67 48 5	2266	69 34 54	2270
	α Pegasi	W.	45 27 2	2736	47 2 54	2701	48 39 32	2674	50 16 47	2649
	Aldebaran	E.	34 30 28	2208	32 42 12	2235	30 54 36	2266	29 7 47	2304
	Pollux	E.	77 27 24	2031	75 34 38	2039	73 42 5	2048	71 49 45	2057
28	α Aquilæ	W.	105 23 3	3043	106 52 23	3074	108 21 4	3108	109 49 4	3143
	Saturn	W.	101 6 58	2117	102 57 31	2130	104 47 44	2143	106 37 37	2157
	Fomalhaut	W.	78 26 55	2308	80 12 43	2318	81 58 16	2329	83 43 33	2341
	α Pegasi	W.	58 29 25	2585	60 8 41	2580	61 48 3	2577	63 27 29	2577
	Aldebaran	E.	20 30 51	2630	18 52 37	2750	17 17 4	2909	15 44 56	3121
	Pollux	E.	62 32 4	2113	60 41 25	2126	58 51 5	2139	57 1 5	2152
	Regulus	E.	99 9 5	2122	97 18 39	2135	95 28 33	2148	93 38 47	2161
29	Saturn	W.	115 41 40	2231	117 29 21	2247	119 16 38	2263	121 3 32	2279
	Fomalhaut	W.	92 25 15	2412	94 8 32	2429	95 51 26	2445	97 33 57	2462
	α Pegasi	W.	71 44 0	2599	73 22 57	2607	75 1 42	2617	76 40 14	2627
	α Arietis	W.	28 11 54	2465	29 53 56	2455	31 36 12	2450	33 18 36	2448
	Pollux	E.	47 56 21	2225	46 8 31	2241	44 21 4	2256	42 34 0	2272
	Regulus	E.	84 35 9	2233	82 47 31	2249	81 0 16	2264	79 13 24	2281
	Sun	E.	123 6 55	2533	121 26 27	2549	119 46 22	2565	118 6 39	2582
30	Fomalhaut	W.	106 0 10	2557	107 40 4	2577	109 19 30	2598	110 58 28	2620
	α Pegasi	W.	84 49 0	2692	86 25 51	2707	88 2 22	2722	89 38 32	2738
	α Arietis	W.	41 50 8	2470	43 32 3	2480	45 13 45	2489	46 55 13	2499
	Pollux	E,	33 44 34	2353	31 59 52	2371	30 15 35	2388	28 31 43	2405
	Regulus	E.	70 24 58	2362	68 40 28	2379	66 56 23	2395	65 12 41	2412
	Sun	E.	109 53 53	2668	108 16 30	2686	106 39 31	2703	105 2 55	2721

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	274	188 7 55.5	7 26.0	147.67	+0.41	0.0001957	−51.0	11 17 56.84
2	275	189 7 0.6	6 30.9	147.77	0.47	0.0000737	51.0	11 14 0.93
3	276	190 6 8.0	5 38.2	147.87	0.52	9.9999515	50.9	11 10 5.02
4	277	191 5 17.9	4 48.0	147.97	0.52	.9998294	50.9	11 6 9.11
5	278	192 4 30.1	4 0.1	148.06	0.51	.9997069	51.0	11 2 13.20
6	279	193 3 44.6	3 14.5	148.15	0.47	.9995841	51.1	10 58 17.30
7	280	194 3 1.4	2 31.2	148.25	0.39	.9994610	51.3	10 54 21.39
8	281	195 2 20.4	1 50.1	148.34	0.29	.9993375	51.5	10 50 25.48
9	282	196 1 41.6	1 11.2	148.44	0.19	.9992136	51.7	10 46 29.58
10	283	197 1 4.9	0 34.4	148.52	+0.06	.9990893	51.8	10 42 33.67
11	284	197 60 30.3	59 59.7	148.60	−0.07	.9989647	52.0	10 38 37.76
12	285	198 59 57.6	59 26.8	148.68	0.20	.9988397	52.1	10 34 41.85
13	286	199 59 26.9	58 56.0	148.75	0.33	.9987143	52.3	10 30 45.94
14	287	200 58 58.1	58 27.1	148.83	0.44	.9985887	52.3	10 26 50.03
15	288	201 58 31.1	58 0.0	148.91	0.54	.9984630	52.4	10 22 54.12
16	289	202 58 5.8	57 34.5	148.98	0.61	.9983374	52.3	10 18 58.22
17	290	203 57 42.2	57 10.8	149.05	0.63	.9982122	52.1	10 15 2.30
18	291	204 57 20.4	56 48.9	149.13	0.62	.9980875	51.9	10 11 6.41
19	292	205 57 0.4	56 28.8	149.20	0.58	.9979633	51.6	10 7 10.50
20	293	206 56 42.1	56 10.4	149.27	0.52	.9978398	51.3	10 3 14.59
21	294	207 56 25.6	55 53.7	149.34	0.44	.9977172	50.9	9 59 18.68
22	295	208 56 10.8	55 38.7	149.41	0.34	.9975956	50.5	9 55 22.77
23	296	209 55 57.8	55 25.6	149.49	0.22	.9974750	50.0	9 51 26.86
24	297	210 55 46.6	55 14.3	149.57	−0.09	.9973557	49.5	9 47 30.95
25	298	211 55 37.2	55 4.8	149.65	+0.05	.9972377	48.9	9 43 35.04
26	299	212 55 29.8	54 57.2	149.73	0.19	.9971211	48.3	9 39 39.13
27	300	213 55 24.4	54 51.7	149.82	0.30	.9970059	47.7	9 35 43.22
28	301	214 55 21.1	54 48.3	149.90	0.39	.9968921	47.1	9 31 47.31
29	302	215 55 19.9	54 47.0	149.99	0.48	.9967797	46.6	9 27 51.40
30	303	216 55 20.8	54 47.7	150.08	0.54	.9966685	46.0	9 23 55.50
31	304	217 55 23.8	54 50.5	150.17	0.56	.9965565	45.5	9 19 59.59
32	305	218 55 29.0	54 55.5	150.26	+0.55	9.9964497	−45.0	9 16 3.68

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
$-9^{s}.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 58.5	15 51.5	58 31.3	-2.15	58 5.6	-2.12	17 38.1	2.49	20.7
2	15 44.6	15 38.0	57 40.4	2.07	57 16.0	1.99	18 36.5	2.36	21.7
3	15 31.7	15 25.7	56 52.8	1.89	56 30.8	1.77	19 31.2	2.19	22.7
4	15 20.2	15 15.0	56 10.3	1.65	55 51.3	1.52	20 21.5	2.01	23.7
5	15 10.2	15 5.9	55 33.8	1.39	55 17.9	1.26	21 7.7	1.85	24.7
6	15 1.9	14 58.5	55 3.5	1.13	54 50.7	1.01	21 50.7	1.73	25.7
7	14 55.4	14 52.7	54 39.3	0.89	54 29.4	0.77	22 31.2	1.66	26.7
8	14 50.3	14 48.4	54 20.8	0.66	54 13.5	0.55	23 10.6	1.63	27.7
9	14 46.8	14 45.5	54 7.6	0.44	54 2.9	0.33	23 49.7	1.64	28.7
10	14 44.5	14 43.9	53 59.5	0.23	53 57.4	-0.13	6		0.0
11	14 43.7	14 43.8	53 56.5	-0.02	53 56.9	+0.10	0 29.6	1.69	1.0
12	14 44.3	14 45.3	53 58.8	+0.22	54 2.2	0.34	1 11.1	1.78	2.0
13	14 46.6	14 48.4	54 7.1	0.48	54 13.8	0.62	1 55.2	1.90	3.0
14	14 50.7	14 53.5	54 22.2	0.78	54 32.4	0.94	2 42.3	2.03	4.0
15	14 56.8	15 0.7	54 44.6	1.10	54 58.9	1.27	3 32.5	2.15	5.0
16	15 5.1	15 10.0	55 15.1	1.44	55 33.4	1.61	4 25.5	2.25	6.0
17	15 15.6	15 21.7	55 53.8	1.77	56 16.0	1.93	5 20.1	2.29	7.0
18	15 28.2	15 35.2	56 40.1	2.07	57 5.7	2.20	6 15.1	2.28	8.0
19	15 42.6	15 50.2	57 32.8	2.30	58 0.8	2.36	7 9.1	2.22	9.0
20	15 58.0	16 5.8	58 29.4	2.39	58 58.0	2.36	8 1.7	2.16	10.0
21	16 13.4	16 20.7	59 25.9	2.29	59 52.6	2.15	8 52.8	2.11	11.0
22	16 27.4	16 33.4	60 17.4	1.96	60 39.4	1.70	9 43.2	2.10	12.0
23	16 38.4	16 42.3	60 57.9	1.38	61 12.3	1.02	10 33.9	2.14	13.0
24	16 45.0	16 46.4	61 22.1	+0.62	61 27.1	+0.20	11 26.3	2.23	14.0
25	16 46.3	16 44.8	61 26.9	-0.23	61 21.5	-0.66	12 21.6	2.37	15.0
26	16 42.0	16 38.0	61 11.1	1.06	60 56.2	1.42	13 20.3	2.52	16.0
27	16 32.8	16 26.7	60 37.1	1.74	60 14.6	2.00	14 22.1	2.62	17.0
28	16 19.8	16 12.4	59 49.3	2.20	59 22.1	2.33	15 25.1	2.61	18.0
29	16 4.6	15 56.7	58 53.6	2.41	58 24.6	2.43	16 26.8	2.50	19.0
30	15 48.8	15 41.1	57 55.6	2.40	57 27.2	2.32	17 24.6	2.32	20.0
31	15 33.7	15 26.7	57 0.0	2.21	56 34.2	2.08	18 17.6	2.10	21.0
32	15 20.1	15 14.1	56 10.2	-1.93	55 48.1	-1.76	19 5.7	1.92	22.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 35 49.34	2.5875	N.27 48 35.7	3.133
1	5 38 24.57	2.5867	27 51 38.2	2.949
2	5 40 59.74	2.5857	27 54 29.6	2.765
3	5 43 34.85	2.5846	27 57 10.0	2.581
4	5 46 9.89	2.5833	27 59 39.3	2.397
5	5 48 44.85	2.5820	28 1 57.6	2.213
6	5 51 19.73	2.5805	28 4 4.8	2.029
7	5 53 54.51	2.5788	28 6 1.0	1.845
8	5 56 29.18	2.5770	28 7 46.2	1.662
9	5 59 3.75	2.5750	28 9 20.5	1.480
10	6 1 38.19	2.5729	28 10 43.9	1.298
11	6 4 12.50	2.5707	28 11 56.3	1.116
12	6 6 46.67	2.5683	38 12 57.8	0.935
13	6 9 20.70	2.5658	28 13 48.5	0.754
14	6 11 54.57	2.5632	28 14 28.3	0.573
15	6 14 28.29	2.5605	28 14 57.3	0.394
16	6 17 1.83	2.5575	28 15 15.6	0.216
17	6 19 35.19	2.5545	28 15 23.2	+0.037
18	6 22 8.37	2.5513	28 15 20.0	−0.141
19	6 24 41.35	2.5480	28 15 6.2	0.318
20	6 27 14.13	2.5447	28 14 41.8	0.495
21	6 29 46.71	2.5412	28 14 6.8	0.671
22	6 32 19.07	2.5375	28 13 21.3	0.845
23	6 34 51.20	2.5337	N.28 12 25.4	1.019

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 37 23.11	2.5298	N.28 11 19.0	1.192
1	6 39 54.78	2.5257	28 10 2.3	1.365
2	6 42 26.20	2.5215	28 8 35.2	1.537
3	6 44 57.36	2.5172	28 6 57.8	1.708
4	6 47 28.27	2.5129	28 5 10.2	1.878
5	6 49 58.91	2.5084	28 3 12.4	2.047
6	6 52 29.28	2.5038	28 1 4.5	2.215
7	6 54 59.37	2.4991	27 58 46.6	2.382
8	6 57 29.17	2.4943	27 56 18.7	2.549
9	6 59 58.69	2.4895	27 53 40.8	2.715
10	7 2 27.91	2.4845	27 50 53.0	2.878
11	7 4 56.82	2.4793	27 47 55.5	3.040
12	7 7 25.43	2.4742	27 44 48.2	3.202
13	7 9 53.72	2.4689	27 41 31.2	3.363
14	7 12 21.69	2.4634	27 38 4.6	3.522
15	7 14 49.33	2.4579	27 34 28.5	3.681
16	7 17 16.64	2.4524	27 30 42.8	3.839
17	7 19 43.62	2.4468	27 26 47.7	3.996
18	7 22 10.26	2.4411	27 22 43.3	4.151
19	7 24 36.55	2.4353	27 18 29.6	4.305
20	7 27 2.49	2.4294	27 14 6.7	4.458
21	7 29 28.08	2.4235	27 9 34.6	4.610
22	7 31 53.31	2.4174	27 4 53.5	4.760
23	7 34 18.17	2.4113	27 0 3.4	4.910
24	7 36 42.66	2.4052	N.26 55 4.3	5.058

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 36 42.66	2.4052	N.26 55 4.3	5.058
1	7 39 6.79	2.3990	26 49 56.4	5.204
2	7 41 30.54	2.3927	26 44 39.8	5.349
3	7 43 53.91	2.3864	26 39 14.5	5.494
4	7 46 16.90	2.3800	26 33 40.5	5.637
5	7 48 39.51	2.3736	26 27 57.9	5.779
6	7 51 1.73	2.3671	26 22 6.9	5.920
7	7 53 23.56	2.3606	26 16 7.5	6.059
8	7 55 45.00	2.3540	26 9 59.8	6.196
9	7 58 6.04	2.3473	26 3 43.9	6.333
10	8 0 26.68	2.3407	25 57 19.9	6.469
11	8 2 46.92	2.3341	25 50 47.7	6.603
12	8 5 6.77	2.3274	25 44 7.5	6.736
13	8 7 26.21	2.3207	25 37 19.4	6.867
14	8 9 45.25	2.3139	25 30 23.5	6.997
15	8 12 3.88	2.3071	25 23 19.8	7.126
16	8 14 22.10	2.3003	25 16 8.4	7.253
17	8 16 39.91	2.2935	25 8 49.5	7.379
18	8 18 57.32	2.2867	25 1 23.0	7.504
19	8 21 14.31	2.2798	24 53 49.1	7.626
20	8 23 30.89	2.2729	24 46 7.9	7.748
21	8 25 47.06	2.2660	24 38 19.3	7.870
22	8 28 2.81	2.2591	24 30 23.5	7.989
23	8 30 18.15	2.2522	N.24 22 20.6	8.106

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 32 33.08	2.2453	N.24 14 10.7	8.223
1	8 34 47.59	2.2384	24 5 53.8	8.339
2	8 37 1.69	2.2316	23 57 30.0	8.452
3	8 39 15.38	2.2247	23 48 59.5	8.564
4	8 41 28.65	2.2178	23 40 22.2	8.676
5	8 43 41.51	2.2108	23 31 38.3	8.786
6	8 45 53.95	2.2039	23 22 47.8	8.895
7	8 48 5.98	2.1971	23 13 50.8	9.003
8	8 50 17.60	2.1903	23 4 47.4	9.109
9	8 52 28.81	2.1834	22 55 37.7	9.213
10	8 54 39.61	2.1766	22 46 21.8	9.316
11	8 56 50.00	2.1698	22 36 59.7	9.419
12	8 58 59.99	2.1631	22 27 31.5	9.520
13	9 1 9.57	2.1563	22 17 57.3	9.619
14	9 3 18.74	2.1495	22 8 17.2	9.717
15	9 5 27.51	2.1428	21 58 31.2	9.815
16	9 7 35.88	2.1362	21 48 39.4	9.911
17	9 9 43.85	2.1296	21 38 41.9	10.005
18	9 11 51.43	2.1230	21 28 38.8	10.098
19	9 13 58.61	2.1164	21 18 30.1	10.190
20	9 16 5.40	2.1098	21 8 16.0	10.281
21	9 18 11.79	2.1033	20 57 56.4	10.371
22	9 20 17.79	2.0968	20 47 31.5	10.458
23	9 22 23.41	2.0904	20 37 1.4	10.545
24	9 24 28.64	2.0840	N.20 26 26.1	10.631

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 5.					WEDNESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 24 28.64	2.0840	N.20 26 26.1	10.631	0	10 58 6.97	1.8406	N.10 39 12.2	13.430
1	9 26 33.49	2.0777	20 15 45.7	10.716	1	10 59 57.30	1.8371	10 25 45.4	13.463
2	9 28 37.96	2.0713	20 5 0.2	10.799	2	11 1 47.42	1.8336	10 12 16.6	13.496
3	9 30 42.05	2.0651	19 54 9.8	10.881	3	11 3 37.33	1.8302	9 58 45.8	13.528
4	9 32 45.77	2.0588	19 43 14.5	10.962	4	11 5 27.04	1.8269	9 45 13.2	13.559
5	9 34 49.11	2.0526	19 32 14.4	11.041	5	11 7 16.56	1.8237	9 31 38.7	13.590
6	9 36 52.08	2.0465	19 21 9.6	11.119	6	11 9 5.88	1.8205	9 18 2.4	13.619
7	9 38 54.69	2.0404	19 10 0.1	11.197	7	11 10 55.01	1.8173	9 4 24.4	13.648
8	9 40 56.93	2.0343	18 58 46.0	11.274	8	11 12 43.96	1.8143	8 50 44.7	13.675
9	9 42 58.81	2.0283	18 47 27.3	11.349	9	11 14 32.73	1.8113	8 37 3.4	13.702
10	9 45 0.33	2.0224	18 36 4.2	11.422	10	11 16 21.32	1.8084	8 23 20.5	13.728
11	9 47 1.50	2.0166	18 24 36.7	11.494	11	11 18 9.74	1.8056	8 9 36.1	13.752
12	9 49 2.32	2.0108	18 13 4.9	11.565	12	11 19 57.99	1.8028	7 55 50.3	13.776
13	9 51 2.79	2.0049	18 1 28.9	11.635	13	11 21 46.07	1.8001	7 42 3.0	13.799
14	9 53 2.91	1.9992	17 49 48.7	11.705	14	11 23 34.00	1.7975	7 28 14.4	13.822
15	9 55 2.69	1.9935	17 38 4.3	11.773	15	11 25 21.77	1.7949	7 14 24.4	13.844
16	9 57 2.13	1.9879	17 26 15.9	11.840	16	11 27 9.39	1.7924	7 0 33.1	13.864
17	9 59 1.24	1.9823	17 14 23.5	11.906	17	11 28 56.86	1.7899	6 46 40.7	13.884
18	10 1 0.01	1.9768	17 2 27.2	11.971	18	11 30 44.18	1.7875	6 32 47.1	13.904
19	10 2 58.45	1.9713	16 50 27.0	12.034	19	11 32 31.36	1.7853	6 18 52.3	13.922
20	10 4 56.57	1.9660	16 38 23.1	12.096	20	11 34 18.41	1.7831	6 4 56.5	13.939
21	10 6 54.37	1.9607	16 26 15.5	12.158	21	11 36 5.33	1.7809	5 50 59.7	13.955
22	10 8 51.85	1.9554	16 14 4.2	12.218	22	11 37 52.12	1.7788	5 37 1.9	13.971
23	10 10 49.02	1.9502	N.16 1 49.4	12.277	23	11 39 38.79	1.7768	N. 5 23 3.2	13.986
	TUESDAY 6.					THURSDAY 8.			
0	10 12 45.87	1.9450	N.15 49 31.0	12.336	0	11 41 25.34	1.7748	N. 5 9 3.6	14.000
1	10 14 42.42	1.9399	15 37 9.1	12.393	1	11 43 11.77	1.7730	4 55 3.2	14.013
2	10 16 38.66	1.9348	15 24 43.9	12.449	2	11 44 58.10	1.7713	4 41 2.0	14.026
3	10 18 34.60	1.9299	15 12 15.3	12.505	3	11 46 44.32	1.7695	4 27 0.0	14.038
4	10 20 30.25	1.9251	14 59 43.4	12.558	4	11 48 30.44	1.7678	4 12 57.4	14.048
5	10 22 25.61	1.9202	14 47 8.4	12.610	5	11 50 16.46	1.7662	3 58 54.2	14.058
6	10 24 20.67	1.9153	14 34 30.2	12.662	6	11 52 2.38	1.7646	3 44 50.4	14.067
7	10 26 15.45	1.9107	14 21 48.9	12.713	7	11 53 48.21	1.7632	3 30 46.1	14.076
8	10 28 9.95	1.9060	14 9 4.6	12.763	8	11 55 33.96	1.7618	3 16 41.3	14.084
9	10 30 4.17	1.9014	13 56 17.3	12.812	9	11 57 19.63	1.7605	3 2 36.0	14.092
10	10 31 58.12	1.8969	13 43 27.1	12.860	10	11 59 5.22	1.7592	2 48 30.3	14.098
11	10 33 51.80	1.8925	13 30 34.1	12.907	11	12 0 50.73	1.7579	2 34 24.3	14.103
12	10 35 45.22	1.8882	13 17 38.3	12.953	12	12 2 36.17	1.7568	2 20 18.0	14.108
13	10 37 38.38	1.8838	13 4 39.8	12.998	13	12 4 21.54	1.7558	2 6 11.4	14.112
14	10 39 31.28	1.8795	12 51 38.6	13.042	14	12 6 6.86	1.7548	1 52 4.6	14.115
15	10 41 23.92	1.8753	12 38 34.8	13.085	15	12 7 52.12	1.7539	1 37 57.7	14.117
16	10 43 16.31	1.8712	12 25 28.4	13.128	16	12 9 37.33	1.7531	1 23 50.6	14.119
17	10 45 8.46	1.8672	12 12 19.5	13.169	17	12 11 22.49	1.7523	1 9 43.5	14.119
18	10 47 0.37	1.8632	11 59 8.2	13.209	18	12 13 7.60	1.7515	0 55 36.4	14.119
19	10 48 52.04	1.8593	11 45 54.5	13.248	19	12 14 52.67	1.7508	0 41 29.3	14.118
20	10 50 43.48	1.8554	11 32 38.5	13.286	20	12 16 37.70	1.7503	0 27 22.3	14.116
21	10 52 34.69	1.8516	11 19 20.2	13.323	21	12 18 22.70	1.7497	N. 0 13 15.4	14.114
22	10 54 25.67	1.8478	11 5 59.7	13.360	22	12 20 7.66	1.7492	S. 0 0 51.4	14.111
23	10 56 16.43	1.8442	10 52 37.0	13.396	23	12 21 52.60	1.7488	0 14 57.9	14.107
24	10 58 6.97	1.8406	N.10 39 12.2	13.430	24	12 23 37.52	1.7485	S. 0 29 4.2	14.103

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 9.					SUNDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 23 37.52	1.7485	S. 0 29 4.2	14.103	0	13 48 23.20	1.8072	S. 11 26 10.6	12.982
1	12 25 22.42	1.7483	0 43 10.2	14.097	1	13 50 11.71	1.8099	11 39 8.2	12.939
2	12 27 7.31	1.7480	0 57 15.8	14.090	2	13 52 0.39	1.8126	11 52 3.2	12.896
3	12 28 52.18	1.7478	1 11 21.0	14.083	3	13 53 49.23	1.8154	12 4 55.7	12.853
4	12 30 37.04	1.7478	1 25 25.8	14.075	4	13 55 38.24	1.8183	12 17 45.5	12.807
5	12 32 21.91	1.7478	1 39 30.1	14.067	5	13 57 27.43	1.8212	12 30 32.5	12.761
6	12 34 6.78	1.7478	1 53 33.9	14.058	6	13 59 16.79	1.8242	12 43 16.8	12.715
7	12 35 51.65	1.7479	2 7 37.1	14.048	7	14 1 6.33	1.8273	12 55 58.3	12.668
8	12 37 36.53	1.7482	2 21 39.7	14.037	8	14 2 56.06	1.8304	13 8 36.9	12.620
9	12 39 21.43	1.7484	2 35 41.6	14.026	9	14 4 45.98	1.8336	13 21 12.6	12.571
10	12 41 6.34	1.7487	2 49 42.8	14.014	10	14 6 36.09	1.8368	13 33 45.3	12.521
11	12 42 51.27	1.7491	3 3 43.3	14.001	11	14 8 26.39	1.8400	13 46 15.0	12.470
12	12 44 36.23	1.7495	3 17 43.0	13.988	12	14 10 16.89	1.8433	13 58 41.6	12.418
13	12 46 21.21	1.7500	3 31 41.9	13.973	13	14 12 7.59	1.8467	14 11 5.1	12.365
14	12 48 6.23	1.7507	3 45 39.8	13.957	14	14 13 58.49	1.8501	14 23 25.4	12.312
15	12 49 51.29	1.7513	3 59 36.8	13.941	15	14 15 49.60	1.8535	14 35 42.5	12.259
16	12 51 36.39	1.7520	4 13 32.8	13.925	16	14 17 40.91	1.8570	14 47 56.4	12.204
17	12 53 21.53	1.7528	4 27 27.8	13.907	17	14 19 32.44	1.8606	15 0 7.0	12.148
18	12 55 6.72	1.7536	4 41 21.7	13.889	18	14 21 24.18	1.8642	15 12 14.2	12.091
19	12 56 51.96	1.7545	4 55 14.5	13.870	19	14 23 16.14	1.8678	15 24 18.0	12.034
20	12 58 37.26	1.7554	5 9 6.1	13.850	20	14 25 8.32	1.8715	15 36 18.3	11.975
21	13 0 22.61	1.7564	5 22 56.5	13.830	21	14 27 0.72	1.8753	15 48 15.0	11.916
22	13 2 8.03	1.7575	5 36 45.7	13.808	22	14 28 53.36	1.8791	16 0 8.2	11.856
23	13 3 53.52	1.7587	S. 5 50 33.5	13.786	23	14 30 46.22	1.8829	S. 16 11 57.7	11.795
	SATURDAY 10.					MONDAY 12.			
0	13 5 39.07	1.7599	S. 6 4 20.0	13.763	0	14 32 39.31	1.8868	S. 16 23 43.6	11.734
1	13 7 24.70	1.7612	6 18 5.1	13.740	1	14 34 32.64	1.8908	16 35 25.8	11.671
2	13 9 10.41	1.7625	6 31 48.8	13.716	2	14 36 26.21	1.8948	16 47 4.1	11.607
3	13 10 56.20	1.7638	6 45 31.0	13.691	3	14 38 20.01	1.8988	16 58 38.6	11.543
4	13 12 42.07	1.7653	6 59 11.7	13.664	4	14 40 14.06	1.9029	17 10 9.2	11.478
5	13 14 28.04	1.7669	7 12 50.7	13.637	5	14 42 8.36	1.9071	17 21 35.9	11.412
6	13 16 14.10	1.7685	7 26 28.1	13.610	6	14 44 2.91	1.9113	17 32 58.6	11.345
7	13 18 0.26	1.7702	7 40 3.9	13.582	7	14 45 57.71	1.9155	17 44 17.3	11.277
8	13 19 46.52	1.7718	7 53 37.9	13.553	8	14 47 52.76	1.9197	17 55 31.8	11.208
9	13 21 32.88	1.7736	8 7 10.2	13.523	9	14 49 48.07	1.9239	18 6 42.2	11.139
10	13 23 19.35	1.7754	8 20 40.6	13.492	10	14 51 43.63	1.9283	18 17 48.4	11.068
11	13 25 5.93	1.7773	8 34 9.2	13.461	11	14 53 39.46	1.9327	18 28 50.3	10.996
12	13 26 52.62	1.7792	8 47 35.9	13.429	12	14 55 35.55	1.9371	18 39 47.9	10.924
13	13 28 39.43	1.7813	9 1 0.7	13.396	13	14 57 31.91	1.9416	18 50 41.2	10.851
14	13 30 26.37	1.7833	9 14 23.4	13.362	14	14 59 28.54	1.9460	19 1 30.0	10.776
15	13 32 13.43	1.7854	9 27 44.1	13.328	15	15 1 25.43	1.9504	19 12 14.3	10.701
16	13 34 0.62	1.7876	9 41 2.7	13.293	16	15 3 22.59	1.9550	19 22 54.1	10.625
17	13 35 47.94	1.7898	9 54 19.2	13.257	17	15 5 20.03	1.9596	19 33 29.3	10.547
18	13 37 35.40	1.7922	10 7 33.5	13.220	18	15 7 17.74	1.9642	19 43 59.8	10.469
19	13 39 23.00	1.7945	10 20 45.6	13.183	19	15 9 15.73	1.9688	19 54 25.6	10.391
20	13 41 10.74	1.7969	10 33 55.4	13.144	20	15 11 14.00	1.9736	20 4 46.7	10.312
21	13 42 58.63	1.7993	10 47 2.8	13.104	21	15 13 12.56	1.9784	20 15 3.0	10.231
22	13 44 46.66	1.8018	11 0 7.8	13.064	22	15 15 11.40	1.9831	20 25 14.4	10.149
23	13 46 34.85	1.8045	11 13 10.4	13.024	23	15 17 10.53	1.9878	20 35 20.9	10.066
24	13 48 23.20	1.8072	S. 11 26 10.6	12.982	24	15 19 9.94	1.9926	S. 20 45 22.4	9.983

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 13.					THURSDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 19 9.94	1.9926	S.20 45 22.4	9.983	0	17 0 33.45	2.2298	S.26 50 29.8	4.874
1	15 21 9.64	1.9974	20 55 18.9	9.898	1	17 2 47.38	2.2343	26 55 18.4	4.745
2	15 23 9.63	2.0023	21 5 10.2	9.812	2	17 5 1.57	2.2388	26 59 59.2	4.615
3	15 25 9.91	2.0072	21 14 56.4	9.726	3	17 7 16.03	2.2432	27 4 32.2	4.485
4	15 27 10.49	2.0121	21 24 37.4	9.639	4	17 9 30.75	2.2475	27 8 57.4	4.354
5	15 29 11.36	2.0169	21 34 13.1	9.551	5	17 11 45.73	2.2518	27 13 14.7	4.222
6	15 31 12.52	2.0218	21 43 43.5	9.462	6	17 14 0.96	2.2560	27 17 24.1	4.090
7	15 33 13.98	2.0268	21 53 8.5	9.372	7	17 16 16.45	2.2602	27 21 25.5	3.956
8	15 35 15.74	2.0318	22 2 28.1	9.281	8	17 18 32.18	2.2643	27 25 18.8	3.822
9	15 37 17.80	2.0368	22 11 42.2	9.189	9	17 20 48.16	2.2684	27 29 4.1	3.687
10	15 39 20.16	2.0418	22 20 50.8	9.096	10	17 23 4.39	2.2724	27 32 41.3	3.551
11	15 41 22.82	2.0468	22 29 53.7	9.002	11	17 25 20.85	2.2763	27 36 10.2	3.414
12	15 43 25.78	2.0518	22 38 51.0	8.908	12	17 27 37.55	2.2802	27 39 30.9	3.277
13	15 45 29.04	2.0569	22 47 42.6	8.812	13	17 29 54.48	2.2841	27 42 43.4	3.139
14	15 47 32.61	2.0620	22 56 28.4	8.715	14	17 32 11.64	2.2878	27 45 47.6	3.000
15	15 49 36.48	2.0671	23 5 8.4	8.618	15	17 34 29.02	2.2915	27 48 43.4	2.861
16	15 51 40.66	2.0722	23 13 42.5	8.520	16	17 36 46.62	2.2952	27 51 30.9	2.721
17	15 53 45.14	2.0772	23 22 10.7	8.421	17	17 39 4.44	2.2988	27 54 9.9	2.580
18	15 55 49.92	2.0823	23 30 32.9	8.320	18	17 41 22.47	2.3022	27 56 40.5	2.439
19	15 57 55.01	2.0874	23 38 49.0	8.218	19	17 43 40.70	2.3056	27 59 2.6	2.297
20	16 0 0.41	2.0925	23 46 59.0	8.116	20	17 45 59.14	2.3090	28 1 16.1	2.154
21	16 2 6.11	2.0975	23 55 2.9	8.013	21	17 48 17.78	2.3123	28 3 21.0	2.011
22	16 4 12.11	2.1026	24 3 0.5	7.908	22	17 50 36.61	2.3155	28 5 17.3	1.867
23	16 6 18.42	2.1077	S.24 10 51.8	7.803	23	17 52 55.63	2.3186	S.28 7 5.0	1.723
	WEDNESDAY 14.					FRIDAY 16.			
0	16 8 25.04	2.1128	S.24 18 36.8	7.696	0	17 55 14.84	2.3217	S.28 8 44.0	1.577
1	16 10 31.96	2.1179	24 26 15.4	7.589	1	17 57 34.23	2.3246	28 10 14.2	1.431
2	16 12 39.19	2.1230	24 33 47.5	7.481	2	17 59 53.79	2.3275	28 11 35.7	1.285
3	16 14 46.72	2.1281	24 41 13.1	7.373	3	18 2 13.53	2.3303	28 12 48.4	1.138
4	16 16 54.56	2.1332	24 48 32.2	7.263	4	18 4 33.43	2.3330	28 13 52.3	0.991
5	16 19 2.70	2.1382	24 55 44.6	7.152	5	18 6 53.49	2.3356	28 14 47.3	0.843
6	16 21 11.14	2.1432	25 2 50.4	7.040	6	18 9 13.70	2.3382	28 15 33.4	0.695
7	16 23 19.88	2.1483	25 9 49.4	6.927	7	18 11 34.07	2.3407	28 16 10.6	0.546
8	16 25 28.93	2.1533	25 16 41.6	6.814	8	18 13 54.58	2.3431	28 16 38.9	0.397
9	16 27 38.28	2.1583	25 23 27.0	6.700	9	18 16 15.24	2.3454	28 16 58.2	0.247
10	16 29 47.92	2.1632	25 30 5.5	6.584	10	18 18 36.03	2.3476	28 17 8.5	−0.096
11	16 31 57.86	2.1682	25 36 37.0	6 468	11	18 20 56.95	2.3497	28 17 9.7	+0.055
12	16 34 8.10	2.1731	25 43 1.6	6.351	12	18 23 17.99	2.3518	28 17 1.9	0.205
13	16 36 18.63	2.1780	25 49 19.1	6.232	13	18 25 39.16	2.3538	28 16 45.1	0.357
14	16 38 29.46	2.1829	25 55 29.4	6.113	14	18 28 0.44	2.3556	28 16 19.1	0.509
15	16 40 40.58	2.1877	26 1 32.6	5.994	15	18 30 21.83	2.3574	28 15 44.0	0.661
16	16 42 51.99	2.1925	26 7 28.6	5.873	16	18 32 43.33	2.3591	28 14 59.8	0.814
17	16 45 3.68	2.1973	26 13 17.3	5.750	17	18 35 4.92	2.3607	28 14 6.4	0.967
18	16 47 15.66	2.2021	26 18 58.6	5.627	18	18 37 26.61	2.3623	28 13 3.8	1.120
19	16 49 27.93	2.2068	26 24 32.6	5.504	19	18 39 48.39	2.3637	28 11 52.1	1.273
20	16 51 40.48	2.2115	26 29 59.1	5.379	20	18 42 10.25	2.3649	28 10 31.1	1.427
21	16 53 53.31	2.2162	26 35 18.1	5.254	21	18 44 32.18	2.3662	28 9 0.9	1.581
22	16 56 6.42	2.2208	26 40 29.6	5.128	22	18 46 54.19	2.3673	28 7 21.5	1.735
23	16 58 19.80	2.2253	26 45 33.5	5.002	23	18 49 16.26	2.3684	28 5 32.8	1.889
24	17 0 33.45	2.2298	S.26 50 29.8	4.874	24	18 51 38.40	2.3694	S.28 3 34.9	2.043

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ″	″
0	18 51 38.40	2.3694	S.28 3 34.9	2.043
1	18 54 0.59	2.3703	28 1 27.7	2.198
2	18 56 22.83	2.3710	27 59 11.2	2.353
3	18 58 45.11	2.3717	27 56 45.4	2.508
4	19 1 7.43	2.3723	27 54 10.2	2.663
5	19 3 29.79	2.3729	27 51 25.8	2.817
6	19 5 52.18	2.3733	27 48 32.1	2.972
7	19 8 14.59	2.3737	27 45 29.1	3.128
8	19 10 37.02	2.3739	27 42 16.7	3.284
9	19 12 59.46	2.3741	27 38 55.0	3.439
10	19 15 21.91	2.3742	27 35 24.0	3.595
11	19 17 44.36	2.3741	27 31 43.6	3.751
12	19 20 6.80	2.3739	27 27 53.9	3.906
13	19 22 29.23	2.3738	27 23 54.9	4.061
14	19 24 51.66	2.3737	27 19 46.6	4.216
15	19 27 14.08	2.3734	27 15 29.0	4.372
16	19 29 36.47	2.3729	27 11 2.0	4.527
17	19 31 58.83	2.3723	27 6 25.8	4.681
18	19 34 21.15	2.3717	27 1 40.3	4.836
19	19 36 43.43	2.3711	26 56 45.5	4.991
20	19 39 5.68	2.3705	26 51 41.4	5.146
21	19 41 27.89	2.3697	26 46 28.1	5.300
22	19 43 50.04	2.3688	26 41 5.5	5.454
23	19 46 12.13	2.3678	S.26 35 33.7	5.608

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 48 34.17	2.3668	S.26 29 52.6	5.762
1	19 50 56.14	2.3656	26 24 2.3	5.915
2	19 53 18.04	2.3645	26 18 2.8	6.068
3	19 55 39.87	2.3633	26 11 54.2	6.221
4	19 58 1.63	2.3619	26 5 36.4	6.373
5	20 0 23.30	2.3605	25 59 9.5	6.525
6	20 2 44.89	2.3591	25 52 33.5	6.677
7	20 5 6.39	2.3576	25 45 48.4	6.828
8	20 7 27.80	2.3560	25 38 54.2	6.979
9	20 9 49.11	2.3544	25 31 51.0	7.129
10	20 12 10.33	2.3528	25 24 38.8	7.279
11	20 14 31.44	2.3510	25 17 17.6	7.429
12	20 16 52.45	2.3492	25 9 47.4	7.578
13	20 19 13.35	2.3474	25 2 8.3	7.726
14	20 21 34.14	2.3455	24 54 20.3	7.874
15	20 23 54.81	2.3436	24 46 23.4	8.022
16	20 26 15.37	2.3417	24 38 17.7	8.169
17	20 28 35.81	2.3396	24 30 3.2	8.316
18	20 30 56.12	2.3375	24 21 39.9	8.462
19	20 33 16.31	2.3354	24 13 7.8	8.607
20	20 35 36.37	2.3333	24 4 27.1	8.752
21	20 37 56.30	2.3311	23 55 37.7	8.897
22	20 40 16.10	2.3289	23 46 39.6	9.041
23	20 42 35.76	2.3266	23 37 32.9	9.183
24	20 44 55.29	2.3243	S.23 28 17.7	9.325

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 44 55.29	2.3243	S.23 28 17.7	9.325
1	20 47 14.68	2.3220	23 18 54.0	9.466
2	20 49 33.93	2.3197	23 9 21.8	9.607
3	20 51 53.04	2.3173	22 59 41.2	9.747
4	20 54 12.01	2.3149	22 49 52.2	9.887
5	20 56 30.83	2.3124	22 39 54.8	10.026
6	20 58 49.50	2.3100	22 29 49.1	10.163
7	21 1 8.03	2.3076	22 19 35.2	10.300
8	21 3 26.41	2.3051	22 9 13.1	10.437
9	21 5 44.64	2.3025	21 58 42.8	10.573
10	21 8 2.71	2.3000	21 48 4.4	10.708
11	21 10 20.64	2.2976	21 37 17.9	10.842
12	21 12 38.42	2.2951	21 26 23.4	10.975
13	21 14 56.05	2.2925	21 15 20.9	11.107
14	21 17 13.52	2.2899	21 4 10.6	11.238
15	21 19 30.84	2.2874	20 52 52.4	11.369
16	21 21 48.01	2.2849	20 41 26.4	11.499
17	21 24 5.03	2.2823	20 29 52.6	11.628
18	21 26 21.89	2.2798	20 18 11.1	11.756
19	21 28 38.60	2.2773	20 6 22.0	11.882
20	21 30 55.16	2.2747	19 54 25.3	12.008
21	21 33 11.56	2.2722	19 42 21.0	12.133
22	21 35 27.82	2.2697	19 30 9.3	12.256
23	21 37 43.93	2.2672	S.19 17 50.2	12.379

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 39 59.88	2.2647	S.19 5 23.7	12.502
1	21 42 15.69	2.2623	18 52 49.9	12.623
2	21 44 31.35	2.2598	18 40 8.9	12.742
3	21 46 46.86	2.2573	18 27 20.8	12.860
4	21 49 2.23	2.2549	18 14 25.6	12.978
5	21 51 17.45	2.2525	18 1 23.3	13.096
6	21 53 32.53	2.2502	17 48 14.0	13.212
7	21 55 47.47	2.2478	17 34 57.8	13.327
8	21 58 2.27	2.2454	17 21 34.8	13.440
9	22 0 16.92	2.2431	17 8 5.0	13.552
10	22 2 31.44	2.2408	16 54 28.5	13.664
11	22 4 45.82	2.2386	16 40 45.3	13.774
12	22 7 0.07	2.2364	16 26 55.6	13.882
13	22 9 14.19	2.2343	16 12 59.4	13.990
14	22 11 28.18	2.2321	15 58 56.8	14.098
15	22 13 42.04	2.2300	15 44 47.7	14.205
16	22 15 55.78	2.2280	15 30 32.3	14.309
17	22 18 9.40	2.2259	15 16 10.8	14.411
18	22 20 22.89	2.2239	15 1 43.1	14.513
19	22 22 36.27	2.2220	14 47 9.3	14.613
20	22 24 49.53	2.2201	14 32 29.6	14.712
21	22 27 2.68	2.2183	14 17 43.9	14.811
22	22 29 15.72	2.2165	14 2 52.3	14.907
23	22 31 28.65	2.2147	13 47 55.1	15.001
24	22 33 41.48	2.2130	S.13 32 52.2	15.096

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 21.					FRIDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 33 41.48	2.2130	S. 13 32 52.2	15.096	0	0 19 7.95	2.2081	S. 0 7 46.2	17.822
1	22 35 54.21	2.2113	13 17 43.6	15.189	1	0 21 20.49	2.2099	N. 0 10 3.5	17.836
2	22 38 6.84	2.2098	13 2 29.5	15.281	2	0 23 33.14	2.2118	0 27 54.1	17.849
3	22 40 19.38	2.2083	12 47 9.9	15.371	3	0 25 45.90	2.2137	0 45 45.4	17.859
4	22 42 31.83	2.2068	12 31 45.0	15.459	4	0 27 58.78	2.2158	1 3 37.2	17.867
5	22 44 44.19	2.2053	12 16 14.8	15.547	5	0 30 11.79	2.2179	1 21 29.4	17.873
6	22 46 56.46	2.2038	12 0 39.4	15.633	6	0 32 24.93	2.2201	1 39 22.0	17.878
7	22 49 8.65	2.2025	11 44 58.9	15.718	7	0 34 38.20	2.2223	1 57 14.8	17.880
8	22 51 20.76	2.2013	11 29 13.3	15.801	8	0 36 51.61	2.2247	2 15 7.6	17.880
9	22 53 32.80	2.2001	11 13 22.8	15.883	9	0 39 5.17	2.2272	2 33 0.4	17.879
10	22 55 44.77	2.1989	10 57 27.4	15.964	10	0 41 18.87	2.2297	2 50 53.1	17.875
11	22 57 56.67	2.1978	10 41 27.2	16.042	11	0 43 32.73	2.2323	3 8 45.4	17.869
12	23 0 8.51	2.1968	10 25 22.4	16.119	12	0 45 46.75	2.2350	3 26 37.3	17.861
13	23 2 20.29	2.1958	10 9 13.0	16.195	13	0 48 0.93	2.2378	3 44 28.7	17.851
14	23 4 32.01	2.1949	9 52 59.0	16.270	14	0 50 15.28	2.2407	4 2 19.4	17.839
15	23 6 43.68	2.1941	9 36 40.6	16.343	15	0 52 29.81	2.2436	4 20 9.4	17.826
16	23 8 55.30	2.1933	9 20 17.9	16.414	16	0 54 44.51	2.2466	4 37 58.5	17.810
17	23 11 6.88	2.1926	9 3 51.0	16.484	17	0 56 59.40	2.2497	4 55 46.5	17.791
18	23 13 18.42	2.1920	8 47 19.9	16.552	18	0 59 14.48	2.2529	5 13 33.3	17.770
19	23 15 29.92	2.1914	8 30 44.8	16.618	19	1 1 29.75	2.2561	5 31 18.8	17.747
20	23 17 41.39	2.1910	8 14 5.7	16.684	20	1 3 45.21	2.2594	5 49 2.9	17.723
21	23 19 52.84	2.1906	7 57 22.7	16.748	21	1 6 0.88	2.2629	6 6 45.5	17.696
22	23 22 4.26	2.1902	7 40 35.9	16.810	22	1 8 16.76	2.2664	6 24 26.4	17.667
23	23 24 15.66	2.1899	S. 7 23 45.5	16.870	23	1 10 32.85	2.2699	N. 6 42 5.5	17.635
	THURSDAY 22.					SATURDAY 24.			
0	23 26 27.05	2.1897	S. 7 6 51.5	16.929	0	1 12 49.15	2.2736	N. 6 59 42.6	17.602
1	23 28 38.43	2.1896	6 49 54.0	16.987	1	1 15 5.68	2.2773	7 17 17.7	17.566
2	23 30 49.80	2.1895	6 32 53.1	17.043	2	1 17 22.43	2.2811	7 34 50.5	17.528
3	23 33 1.17	2.1895	6 15 48.9	17.097	3	1 19 39.41	2.2849	7 52 21.0	17.488
4	23 35 12.54	2.1896	5 58 41.5	17.149	4	1 21 56.62	2.2888	8 9 49.0	17.445
5	23 37 23.92	2.1898	5 41 31.1	17.199	5	1 24 14.07	2.2929	8 27 14.4	17.401
6	23 39 35.32	2.1900	5 24 17.7	17.248	6	1 26 31.77	2.2970	8 44 37.1	17.354
7	23 41 46.73	2.1903	5 7 1.4	17.295	7	1 28 49.71	2.3012	9 1 56.9	17.305
8	23 43 58.16	2.1908	4 49 42.3	17.341	8	1 31 7.91	2.3054	9 19 13.7	17.254
9	23 46 9.62	2.1913	4 32 20.5	17.384	9	1 33 26.36	2.3097	9 36 27.4	17.201
10	23 48 21.11	2.1918	4 14 56.2	17.426	10	1 35 45.07	2.3140	9 53 37.9	17.145
11	23 50 32.64	2.1924	3 57 29.4	17.467	11	1 38 4.04	2.3184	10 10 44.9	17.087
12	23 52 44.20	2.1931	3 40 0.2	17.505	12	1 40 23.28	2.3229	10 27 48.4	17.027
13	23 54 55.81	2.1939	3 22 28.8	17.541	13	1 42 42.79	2.3275	10 44 48.2	16.965
14	23 57 7.47	2.1948	3 4 55.3	17.576	14	1 45 2.58	2.3321	11 1 44.2	16.901
15	23 59 19.19	2.1958	2 47 19.7	17.609	15	1 47 22.65	2.3368	11 18 36.3	16.835
16	0 1 30.97	2.1969	2 29 42.2	17.640	16	1 49 43.00	2.3415	11 35 24.4	16.766
17	0 3 42.82	2.1980	2 12 2.9	17.670	17	1 52 3.63	2.3463	11 52 8.2	16.694
18	0 5 54.73	2.1992	1 54 21.8	17.698	18	1 54 24.55	2.3511	12 8 47.6	16.620
19	0 8 6.72	2.2005	1 36 39.2	17.723	19	1 56 45.76	2.3560	12 25 22.6	16.545
20	0 10 18.79	2.2018	1 18 55.1	17.747	20	1 59 7.27	2.3610	12 41 53.0	16.467
21	0 12 30.94	2.2033	1 1 9.6	17.769	21	2 1 29.08	2.3660	12 58 18.6	16.387
22	0 14 43.18	2.2048	0 43 22.9	17.788	22	2 3 51.19	2.3711	13 14 39.4	16.304
23	0 16 55.52	2.2064	0 25 35.1	17.806	23	2 6 13.61	2.3762	13 30 55.1	16.219
24	0 19 7.95	2.2081	S. 0 7 46.2	17.822	24	2 8 36.33	2.3813	N. 13 47 5.7	16.132

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 25.					TUESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 8 36.33	2.3813	N.13 47 5.7	16.132	0	4 9 3.86	2.6283	N.24 20 42.3	9.524
1	2 10 59.36	2.3865	14 3 11.0	16.043	1	4 11 41.68	2.6322	24 30 8.4	9.344
2	2 13 22.71	2.3917	14 19 10.9	15.951	2	4 14 19.72	2.6359	24 39 23.6	9.162
3	2 15 46.37	2.3970	14 35 5.2	15.857	3	4 16 57.98	2.6394	24 48 27.9	8.979
4	2 18 10.35	2.4022	14 50 53.8	15.761	4	4 19 36.45	2.6429	24 57 21.2	8.795
5	2 20 34.64	2.4075	15 6 36.6	15.664	5	4 22 15.13	2.6464	25 6 3.4	8.611
6	2 22 59.25	2.4129	15 22 13.5	15.564	6	4 24 54.02	2.6497	25 14 34.6	8.425
7	2 25 24.19	2.4183	15 37 44.3	15.461	7	4 27 33.10	2.6528	25 22 54.5	8.238
8	2 27 49.45	2.4237	15 53 8.8	15.356	8	4 30 12.36	2.6558	25 31 3.2	8.051
9	2 30 15.03	2.4291	16 8 27.0	15.249	9	4 32 51.79	2.6586	25 39 0.6	7.862
10	2 32 40.94	2.4346	16 23 38.7	15.140	10	4 35 31.39	2.6613	25 46 46.6	7.671
11	2 35 7.18	2.4401	16 38 43.8	15.028	11	4 38 11.15	2.6639	25 54 21.1	7.480
12	2 37 33.75	2.4456	16 53 42.1	14.915	12	4 40 51.06	2.6663	26 1 44.2	7.288
13	2 40 0.65	2.4511	17 8 33.6	14.799	13	4 43 31.11	2.6687	26 8 55.7	7.096
14	2 42 27.88	2.4567	17 23 18.0	14.681	14	4 46 11.30	2.6709	26 15 55.7	6.904
15	2 44 55.45	2.4623	17 37 55.3	14.562	15	4 48 51.62	2.6729	26 22 44.1	6.710
16	2 47 23.35	2.4678	17 52 25.4	14.440	16	4 51 32.05	2.6748	26 29 20.8	6.515
17	2 49 51.58	2.4733	18 6 48.1	14.315	17	4 54 12.59	2.6765	26 35 45.8	6.320
18	2 52 20.14	2.4788	18 21 3.2	14.188	18	4 56 53.23	2.6781	26 41 59.1	6.124
19	2 54 49.03	2.4843	18 35 10.7	14.060	19	4 59 33.96	2.6794	26 48 0.6	5.927
20	2 57 18.25	2.4898	18 49 10.4	13.930	20	5 2 14.76	2.6806	26 53 50.3	5.731
21	2 59 47.81	2.4954	19 3 2.3	13.798	21	5 4 55.63	2.6816	26 59 28.2	5.534
22	3 2 17.70	2.5009	19 16 46.1	13.663	22	5 7 36.56	2.6825	27 4 54.3	5.336
23	3 4 47.92	2.5064	N.19 30 21.8	13.527	23	5 10 17.53	2.6833	N.27 10 8.5	5.138
	MONDAY 26.					WEDNESDAY 28.			
0	3 7 18.47	2.5118	N.19 43 49.3	13.389	0	5 12 58.55	2.6839	N.27 15 10.8	4.940
1	3 9 49.34	2.5173	19 57 8.4	13.248	1	5 15 39.60	2.6842	27 20 1.2	4.741
2	3 12 20.54	2.5228	20 10 19.0	13.105	2	5 18 20.66	2.6844	27 24 39.7	4.542
3	3 14 52.07	2.5282	20 23 21.0	12.960	3	5 21 1.73	2.6845	27 29 6.3	4.343
4	3 17 23.92	2.5335	20 36 14.2	12.813	4	5 23 42.80	2.6844	27 33 20.9	4.144
5	3 19 56.09	2.5388	20 48 58.6	12.665	5	5 26 23.86	2.6842	27 37 23.6	3.945
6	3 22 28.58	2.5441	21 1 34.1	12.515	6	5 29 4.90	2.6838	27 41 14.3	3.746
7	3 25 1.38	2.5493	21 14 0.5	12.363	7	5 31 45.91	2.6831	27 44 53.1	3.547
8	3 27 34.49	2.5545	21 26 17.7	12.210	8	5 34 26.87	2.6823	27 48 19.9	3.348
9	3 30 7.92	2.5596	21 38 25.7	12.055	9	5 37 7.78	2.6813	27 51 34.8	3.150
10	3 32 41.65	2.5647	21 50 24.3	11.897	10	5 39 48.62	2.6801	27 54 37.8	2.952
11	3 35 15.68	2.5698	22 2 13.3	11.737	11	5 42 29.39	2.6788	27 57 28.9	2.754
12	3 37 50.02	2.5748	22 13 52.7	11.577	12	5 45 10.08	2.6774	28 0 8.1	2.555
13	3 40 24.65	2.5796	22 25 22.5	11.415	13	5 47 50.68	2.6757	28 2 35.4	2.357
14	3 42 59.57	2.5845	22 36 42.5	11.250	14	5 50 31.16	2.6738	28 4 50.9	2.160
15	3 45 34.79	2.5893	22 47 52.5	11.084	15	5 53 11.53	2.6717	28 6 54.5	1.963
16	3 48 10.29	2.5939	22 58 52.5	10.917	16	5 55 51.77	2.6695	28 8 46.3	1.766
17	3 50 46.06	2.5985	23 9 42.5	10.749	17	5 58 31.87	2.6672	28 10 26.3	1.569
18	3 53 22.11	2.6031	23 20 22.3	10.578	18	6 1 11.83	2.6647	28 11 54.5	1.373
19	3 55 58.43	2.6075	23 30 51.8	10.406	19	6 3 51.63	2.6620	28 13 11.0	1.178
20	3 58 35.01	2.6118	23 41 11.0	10.232	20	6 6 31.26	2.6591	28 14 15.8	0.983
21	4 1 11.85	2.6161	23 51 19.7	10.057	21	6 9 10.72	2.6561	28 15 9.0	0.789
22	4 3 48.94	2.6203	24 1 17.9	9.881	22	6 11 49.99	2.6529	28 15 50.5	0.595
23	4 6 26.28	2.6243	24 11 5.5	9.703	23	6 14 29.06	2.6495	28 16 20.4	0.402
24	4 9 3.86	2.6283	N.24 20 42.3	9.524	24	6 17 7.93	2.6460	N.28 16 38.8	0.210

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 17 7.93	2.6460	N.28 16 38.8	0.210
1	6 19 46.58	2.6423	28 16 45.7	+0.019
2	6 22 25.00	2.6384	28 16 41.1	−0.171
3	6 25 3.19	2.6344	28 16 25.2	0.360
4	6 27 41.13	2.6302	28 15 57.9	0.548
5	6 30 18.82	2.6259	28 15 19.4	0.736
6	6 32 56.24	2.6214	28 14 29.6	0.923
7	6 35 33.39	2.6168	28 13 28.6	1.109
8	6 38 10.26	2.6121	28 12 16.5	1.293
9	6 40 46.84	2.6072	28 10 53.4	1.476
10	6 43 23.12	2.6022	28 9 19.3	1.659
11	6 45 59.10	2.5971	28 7 34.3	1.841
12	6 48 34.77	2.5918	28 5 38.4	2.022
13	6 51 10.11	2.5863	28 3 31.7	2.201
14	6 53 45.12	2.5808	28 1 14.3	2.378
15	6 56 19.80	2.5751	27 58 46.3	2.555
16	6 58 54.13	2.5692	27 56 7.7	2.730
17	7 1 28.10	2.5633	27 53 18.7	2.904
18	7 4 1.71	2.5573	27 50 19.2	3.077
19	7 6 34.96	2.5511	27 47 9.4	3.248
20	7 9 7.84	2.5448	27 43 49.3	3.419
21	7 11 40.34	2.5384	27 40 19.0	3.588
22	7 14 12.46	2.5319	27 36 38.6	3.756
23	7 16 44.18	2.5254	N.27 32 48.2	3.923

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 19 15.51	2.5188	N.27 28 47.8	4.088
1	7 21 46.44	2.5120	27 24 37.6	4.252
2	7 24 16.95	2.5051	27 20 17.6	4.414
3	7 26 47.05	2.4982	27 15 48.0	4.574
4	7 29 16.74	2.4913	27 11 8.8	4.734
5	7 31 46.00	2.4842	27 6 20.0	4.892
6	7 34 14.84	2.4771	27 1 21.8	5.048
7	7 36 43.25	2.4698	26 56 14.3	5.202
8	7 39 11.22	2.4625	26 50 57.6	5.355
9	7 41 38.75	2.4552	26 45 31.7	5.507
10	7 44 5.84	2.4478	26 39 56.8	5.657
11	7 46 32.48	2.4403	26 34 12.9	5.806
12	7 48 58.68	2.4328	26 28 20.1	5.953
13	7 51 24.42	2.4252	26 22 18.5	6.099
14	7 53 49.70	2.4175	26 16 8.2	6.242
15	7 56 14.52	2.4098	26 9 49.4	6.384
16	7 58 38.88	2.4022	26 3 22.1	6.526
17	8 1 2.78	2.3944	25 56 46.3	6.666
18	8 3 26.21	2.3866	25 50 2.2	6.803
19	8 5 49.17	2.3788	25 43 9.9	6.939
20	8 8 11.66	2.3710	25 36 9.5	7.074
21	8 10 33.69	2.3632	25 29 1.0	7.207
22	8 12 55.25	2.3553	25 21 44.6	7.339
23	8 15 16.33	2.3473	25 14 20.3	7.469
24	8 17 36.93	2.3394	N.25 6 48.3	7.597

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 17 36.93	2.3394	N.25 6 48.3	7.597
1	8 19 57.06	2.3315	24 59 8.6	7.724
2	8 22 16.71	2.3236	24 51 21.4	7.849
3	8 24 35.89	2.3157	24 43 26.7	7.973
4	8 26 54.59	2.3077	24 35 24.6	8.096
5	8 29 12.81	2.2997	24 27 15.2	8.217
6	8 31 30.55	2.2917	24 18 58.6	8.336
7	8 33 47.82	2.2838	24 10 34.9	8.453
8	8 36 4.61	2.2759	24 2 4.2	8.569
9	8 38 20.93	2.2680	23 53 26.6	8.684
10	8 40 36.77	2.2601	23 44 42.1	8.798
11	8 42 52.14	2.2522	23 35 50.9	8.909
12	8 45 7.03	2.2443	23 26 53.1	9.019
13	8 47 21.45	2.2364	23 17 48.7	9.128
14	8 49 35.40	2.2285	23 8 37.8	9.235
15	8 51 48.87	2.2207	22 59 20.6	9.340
16	8 54 1.88	2.2129	22 49 57.1	9.445
17	8 56 14.42	2.2051	22 40 27.3	9.548
18	8 58 26.49	2.1973	22 30 51.4	9.649
19	9 0 38.10	2.1897	22 21 9.5	9.748
20	9 2 49.26	2.1821	22 11 21.7	9.846
21	9 4 59.96	2.1745	22 1 28.0	9.943
22	9 7 10.20	2.1669	21 51 28.6	10.038
23	9 9 19.99	2.1594	N.21 41 23.5	10.132

SUNDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 11 29.33	2.1520	N.21 31 12.8	10.224

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, . .	2	1	38.4
● New Moon, . .	9	23	1.6
☽ First Quarter,. .	18	1	29.3
○ Full Moon,. . .	24	19	21.0
☾ Last Quarter, . .	31	13	59.9

	d	h
☾ Apogee,.	11	1.9
☾ Perigee,.	24	17.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Pegasi	W.	91° 14′ 21″	2756	92° 49′ 47″	2773	94° 24′ 50″	2791	95° 59′ 30″	2808
	α Arietis	W.	48 36 27	2511	50 17 25	2522	51 58 7	2535	53 38 32	2548
	Aldebaran	W.	19 19 49	2913	20 51 51	2855	22 25 7	2814	23 59 17	2784
	Regulus	E.	63 29 23	2429	61 46 29	2445	60 3 59	2462	58 21 53	2479
	Sun	E.	103 26 43	2738	101 50 54	2756	100 15 28	2773	98 40 25	2791
2	α Pegasi	W.	103 46 41	2909	105 18 49	2929	106 50 31	2951	108 21 45	2973
	α Arietis	W.	61 56 11	2612	63 34 49	2626	65 13 8	2640	66 51 9	2653
	Aldebaran	W.	31 56 43	2730	33 32 43	2730	35 8 43	2732	36 44 41	2735
	Regulus	E.	49 57 12	2562	48 17 25	2579	46 38 1	2595	44 58 59	2611
	Sun	E.	90 50 48	2876	89 17 59	2893	87 45 31	2909	86 13 24	2925
3	α Arietis	W.	74 56 44	2719	76 32 58	2733	78 8 54	2745	79 44 34	2758
	Aldebaran	W.	44 42 57	2767	46 18 8	2775	47 53 9	2783	49 27 59	2792
	Regulus	E.	36 49 21	2693	35 12 32	2709	33 36 4	2725	31 59 58	2742
	Sun	E.	78 37 51	3004	77 7 43	3018	75 37 53	3033	74 8 21	3047
4	α Arietis	W.	87 38 47	2819	89 12 50	2831	90 46 38	2842	92 20 11	2853
	Aldebaran	W.	57 19 11	2838	58 52 50	2848	60 26 16	2857	61 59 30	2866
	Sun	E.	66 45 1	3115	65 17 10	3128	63 49 34	3140	62 22 13	3153
5	α Arietis	W.	100 4 24	2907	101 36 34	2917	103 8 31	2927	104 40 15	2938
	Aldebaran	W.	69 42 49	2910	71 14 55	2918	72 46 51	2927	74 18 36	2935
	Pollux	W.	25 30 29	2857	27 3 43	2866	28 36 46	2875	30 9 37	2883
	Sun	E.	55 9 1	3209	53 43 2	3220	52 17 16	3230	50 51 42	3239
6	Aldebaran	W.	81 54 48	2974	83 25 33	2981	84 56 9	2988	86 26 37	2994
	Pollux	W.	37 51 13	2923	39 23 3	2931	40 54 43	2938	42 26 14	2944
	Sun	E.	43 46 38	3285	42 22 9	3293	40 57 49	3301	39 33 39	3308
7	Aldebaran	W.	93 56 52	3027	95 26 31	3034	96 56 2	3039	98 25 26	3045
	Pollux	W.	50 1 45	2976	51 32 28	2982	53 3 3	2987	54 33 32	2993
	Sun	E.	32 34 56	3345	31 11 36	3351	29 48 23	3358	28 25 18	3363
12	Sun	W.	22 3 51	3453	23 25 8	3452	24 46 26	3449	26 7 47	3447
	α Aquilæ	E.	81 4 0	3945	79 51 26	3952	78 38 59	3960	77 26 40	3969
	Saturn	E.	86 37 37	3083	85 9 7	3082	83 40 36	3082	82 12 4	3080
	Fomalhaut	E.	109 5 38	3282	107 41 6	3277	106 16 28	3273	104 51 45	3269
13	Sun	W.	32 55 9	3434	34 16 47	3431	35 38 29	3427	37 0 15	3423
	α Aquilæ	E.	71 27 37	4029	70 16 26	4044	69 5 30	4062	67 54 51	4079
	Saturn	E.	74 48 52	3070	73 20 6	3067	71 51 16	3064	70 22 22	3060
	Fomalhaut	E.	97 46 55	3247	96 21 42	3243	94 56 24	3239	93 31 1	3236
14	Sun	W.	43 50 18	3399	45 12 36	3393	46 35 0	3386	47 57 32	3380
	α Aquilæ	E.	62 6 29	4196	60 57 59	4226	59 49 57	4258	58 42 25	4293
	Saturn	E.	62 56 46	3040	61 27 23	3036	59 57 55	3030	58 28 20	3026
	Fomalhaut	E.	86 22 53	3214	84 57 0	3209	83 31 2	3204	82 4 58	3200
	α Pegasi	E.	107 8 16	3396	105 45 55	3386	104 23 22	3375	103 0 37	3365
15	Sun	W.	54 52 11	3342	56 15 34	3334	57 39 6	3325	59 2 49	3315
	Saturn	E.	50 58 41	2994	49 28 21	2988	47 57 53	2981	46 27 16	2973
	α Aquilæ	E.	53 13 47	4519	52 10 12	4578	51 7 28	4642	50 5 39	4711
	Fomalhaut	E.	74 53 17	3177	73 26 40	3172	71 59 57	3168	70 33 9	3163
	α Pegasi	E.	96 3 57	3315	94 40 3	3306	93 15 58	3297	91 51 43	3288

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Pegasi	W.	97° 33′ 47″	2828	99° 7′ 39″	2848	100° 41′ 5″	2867	102° 14′ 6″	2887
	α Arietis	W.	55 18 39	2560	56 58 29	2573	58 38 1	2586	60 17 15	2599
	Aldebaran	W.	25 34 6	2763	27 9 23	2748	28 44 59	2739	30 20 47	2733
	Regulus	E.	56 40 10	2496	54 58 51	2512	53 17 55	2529	51 37 22	2545
	Sun	E.	97 5 45	2808	95 31 27	2825	93 57 32	2842	92 23 59	2859
2	α Pegasi	W.	109 52 31	2997	111 22 48	3020	112 52 36	3044	114 21 54	3069
	α Arietis	W.	68 28 52	2666	70 6 17	2680	71 43 24	2693	73 20 13	2707
	Aldebaran	W.	38 20 35	2739	39 56 23	2745	41 32 3	2751	43 7 35	2759
	Regulus	E.	43 20 19	2627	41 42 1	2643	40 4 5	2660	38 26 32	2677
	Sun	E.	84 41 37	2942	83 10 11	2958	81 39 5	2973	80 8 18	2989
3	α Arietis	W.	81 19 57	2770	82 55 4	2783	84 29 54	2795	86 4 28	2807
	Aldebaran	W.	51 2 37	2801	52 37 3	2811	54 11 17	2819	55 45 20	2828
	Regulus	E.	30 24 14	2759	28 48 52	2777	27 13 54	2795	25 39 20	2815
	Sun	E.	72 39 7	3061	71 10 10	3076	69 41 31	3089	68 13 8	3102
4	α Arietis	W.	93 53 30	2864	95 26 35	2876	96 59 25	2887	98 32 1	2897
	Aldebaran	W.	63 32 33	2875	65 5 24	2883	66 38 4	2893	68 10 32	2901
	Sun	E.	60 55 7	3164	59 28 15	3176	58 1 37	3187	56 35 12	3198
5	α Arietis	W.	106 11 46	2947	107 43 5	2957	109 14 12	2965	110 45 8	2975
	Aldebaran	W.	75 50 10	2943	77 21 34	2951	78 52 48	2958	80 23 53	2966
	Pollux	W.	31 42 17	2892	33 14 46	2900	34 47 5	2908	36 19 14	2916
	Sun	E.	49 26 19	3249	48 1 8	3258	46 36 7	3267	45 11 17	3276
6	Aldebaran	W.	87 56 57	3001	89 27 8	3008	90 57 11	3014	92 27 6	3022
	Pollux	W.	43 57 37	2951	45 28 51	2958	46 59 57	2964	48 30 55	2970
	Sun	E.	38 9 37	3316	36 45 44	3324	35 22 0	3331	33 58 24	3338
7	Aldebaran	W.	99 54 43	3051	101 23 53	3056	102 52 56	3062	104 21 52	3068
	Pollux	W.	56 3 54	2997	57 34 10	3003	59 4 19	3007	60 34 23	3012
	Sun	E.	27 2 19	3369	25 39 27	3375	24 16 42	3380	22 54 3	3386
12	Sun	W.	27 29 10	3446	28 50 35	3443	30 12 3	3440	31 33 34	3437
	α Aquilæ	E.	76 14 30	3979	75 2 30	3989	73 50 40	4002	72 39 2	4015
	Saturn	E.	80 43 30	3078	79 14 54	3077	77 46 16	3074	76 17 35	3073
	Fomalhaut	E.	103 26 57	3265	102 2 4	3260	100 37 6	3256	99 12 3	3252
13	Sun	W.	38 22 5	3419	39 44 0	3415	41 6 0	3409	42 28 6	3404
	α Aquilæ	E.	66 44 29	4100	65 34 27	4120	64 24 45	4143	63 15 25	4168
	Saturn	E.	68 53 24	3057	67 24 22	3053	65 55 15	3049	64 26 3	3045
	Fomalhaut	E.	92 5 34	3231	90 40 2	3226	89 14 24	3222	87 48 41	3218
14	Sun	W.	49 20 11	3373	50 42 58	3365	52 5 54	3358	53 28 58	3351
	α Aquilæ	E.	57 35 26	4331	56 29 2	4372	55 23 15	4417	54 18 9	4466
	Saturn	E.	56 58 39	3020	55 28 51	3014	53 58 55	3008	52 28 52	3001
	Fomalhaut	E.	80 38 49	3195	79 12 34	3191	77 46 14	3186	76 19 48	3182
	α Pegasi	E.	101 37 40	3354	100 14 31	3345	98 51 11	3335	97 27 40	3325
15	Sun	W.	60 26 43	3305	61 50 49	3295	63 15 6	3284	64 39 36	3274
	Saturn	E.	44 56 30	2965	43 25 34	2958	41 54 28	2950	40 23 12	2941
	α Aquilæ	E.	49 4 49	4788	48 5 3	4873	47 6 26	4965	46 9 3	5067
	Fomalhaut	E.	69 6 15	3158	67 39 15	3153	66 12 10	3149	64 45 0	3145
	α Pegasi	E.	90 27 17	3278	89 2 40	3269	87 37 52	3260	86 12 54	3251

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	SUN	W.	66 4 18	3262	67 29 14	3250	68 54 24	3238	70 19 48	3225
	Antares	W.	20 52 21	2904	22 24 35	2892	23 57 4	2880	25 29 48	2869
	Venus	W.	20 39 31	3205	22 5 34	3192	23 31 53	3179	24 58 27	3166
	Saturn	E.	38 51 45	2933	37 20 8	2924	35 48 20	2916	34 16 22	2908
	Fomalhaut	E.	63 17 45	3141	61 50 25	3137	60 23 0	3133	58 55 31	3131
	α Pegasi	E.	84 47 45	3242	83 22 26	3234	81 56 57	3225	80 31 18	3216
17	SUN	W.	77 30 42	3157	78 57 43	3143	80 25 1	3127	81 52 38	3111
	Antares	W.	33 17 28	2804	34 51 51	2790	36 26 32	2775	38 1 32	2761
	Venus	W.	32 15 27	3094	33 43 44	3078	35 12 20	3063	36 41 15	3047
	Saturn	E.	26 33 54	2870	25 0 57	2665	23 27 53	2860	21 54 43	2859
	Fomalhaut	E.	51 37 26	3124	50 9 46	3126	48 42 8	3129	47 14 34	3133
	α Pegasi	E.	73 20 36	3178	71 54 1	3172	70 27 18	3164	69 0 26	3158
	α Arietis	E.	114 58 27	2867	113 25 26	2852	111 52 5	2836	110 18 24	2821
18	SUN	W.	89 15 35	3028	90 45 13	3011	92 15 12	2993	93 45 33	2975
	Antares	W.	46 1 26	2684	47 38 27	2668	49 15 50	2652	50 53 35	2635
	Venus	W.	44 10 57	2962	45 41 58	2943	47 13 22	2925	48 45 9	2907
	Fomalhaut	E.	39 58 50	3189	38 32 28	3210	37 6 31	3236	35 41 5	3269
	α Pegasi	E.	61 44 37	3139	60 17 15	3138	58 49 52	3138	57 22 29	3139
	α Arietis	E.	102 24 52	2740	100 49 5	2723	99 12 56	2706	97 36 24	2689
19	SUN	W.	101 23 6	2881	102 55 49	2862	104 28 56	2842	106 2 29	2823
	Antares	W.	59 8 9	2548	60 48 16	2530	62 28 48	2512	64 9 45	2493
	Venus	W.	56 30 2	2811	58 4 16	2792	59 38 55	2772	61 14 0	2752
	α Pegasi	E.	50 6 41	3176	48 40 3	3192	47 13 44	3211	45 47 48	3234
	α Arietis	E.	89 27 56	2601	87 49 3	2583	86 9 45	2566	84 30 3	2548
20	SUN	W.	113 56 38	2724	115 32 46	2704	117 9 21	2684	118 46 23	2664
	Antares	W.	72 40 59	2401	74 24 32	2383	76 8 31	2364	77 52 57	2346
	Venus	W.	69 16 5	2651	70 53 51	2631	72 32 4	2611	74 10 44	2591
	α Aquilæ	W.	39 38 13	5683	40 26 51	5419	41 18 32	5183	42 13 6	4970
	α Arietis	E.	76 5 20	2459	74 23 9	2441	72 40 33	2424	70 57 33	2407
	Aldebaran	E.	106 26 37	2458	104 44 24	2438	103 1 44	2419	101 18 37	2401
21	Antares	W.	86 41 47	2256	88 28 52	2238	90 16 23	2221	92 4 19	2204
	Venus	W.	82 30 58	2492	84 12 23	2473	85 54 14	2454	87 36 32	2436
	α Aquilæ	W.	47 24 27	4161	48 33 30	4038	49 44 32	3925	50 57 26	3822
	Saturn	W.	27 26 33	2313	29 12 13	2291	30 58 25	2270	32 45 9	2249
	α Arietis	E.	62 16 31	2326	60 31 9	2311	58 45 26	2297	56 59 22	2283
	Aldebaran	E.	92 36 17	2308	90 50 29	2291	89 4 16	2274	87 17 38	2257
22	Antares	W.	101 10 12	2125	103 0 33	2111	104 51 16	2097	106 42 20	2083
	Venus	W.	96 14 24	2349	97 59 12	2333	99 44 23	2318	101 29 56	2303
	α Aquilæ	W.	57 26 26	3411	58 48 30	3347	60 11 47	3288	61 36 13	3232
	Saturn	W.	41 46 13	2156	43 35 47	2140	45 25 45	2124	47 16 7	2109
	α Arietis	E.	48 4 22	2227	46 16 34	2219	44 28 35	2212	42 40 26	2207
	Aldebaran	E.	78 18 28	2180	76 29 31	2167	74 40 13	2153	72 50 35	2141
23	Venus	W.	110 22 52	2237	112 10 24	2227	113 58 12	2217	115 46 14	2208
	α Aquilæ	W.	68 53 11	3016	70 23 4	2982	71 53 39	2952	73 24 52	2925
	Saturn	W.	56 33 19	2046	58 25 42	2035	60 18 21	2026	62 11 15	2016
	Fomalhaut	W.	36 45 13	2574	38 24 43	2520	40 5 29	2472	41 47 21	2430
	Aldebaran	E.	63 38 7	2090	61 46 53	2063	59 55 28	2077	58 3 53	2072
	Pollux	E.	107 15 49	2025	105 22 53	2014	103 29 41	2005	101 36 15	1997

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
16	Sun	W.	71° 45′ 27″	3212	73° 11′ 22″	3199	74° 37′ 32″	3185	76° 3′ 59″	3172
	Antares	W.	27 2 47	2856	28 36 2	2843	30 9 34	3831	31 43 22	2817
	Venus	W.	26 25 17	3152	27 52 24	3138	29 19 47	3124	30 47 28	3109
	Saturn	E.	32 44 13	2899	31 11 53	2891	29 39 23	2883	28 6 43	2876
	Fomalhaut	E.	57 27 59	3129	56 0 24	3126	54 32 46	3124	53 5 6	3124
	α Pegasi	E.	79 5 28	3208	77 39 28	3200	76 13 19	3193	74 47 2	3186
17	Sun	W.	83 20 34	3096	84 48 49	3079	86 17 24	3063	87 46 19	3046
	Antares	W.	39 36 51	2747	41 12 29	2732	42 48 27	2716	44 24 46	2700
	Venus	W.	38 10 30	3030	39 40 5	3014	41 10 1	2997	42 40 18	2979
	Saturn	E.	20 21 31	2860	18 48 21	2866	17 15 18	2876	15 42 28	2892
	Fomalhaut	E.	45 47 5	3139	44 19 43	3148	42 52 32	3158	41 25 33	3172
	α Pegasi	E.	67 33 27	3153	66 6 22	3148	64 39 11	3145	63 11 56	3142
	α Arietis	E.	108 44 23	2805	107 10 2	2789	105 35 20	2773	104 0 17	2756
18	Sun	W.	95 16 17	2957	96 47 24	2939	98 18 54	2920	99 50 48	2901
	Antares	W.	52 31 43	2618	54 10 14	2601	55 49 8	2583	57 28 26	2565
	Venus	W.	50 17 19	2888	51 49 53	2869	53 22 51	2850	54 56 14	2831
	Fomalhaut	E.	34 16 17	3308	32 52 15	3355	31 29 7	3412	30 7 4	3482
	α Pegasi	E.	55 55 7	3143	54 27 49	3148	53 0 37	3154	51 33 33	3164
	α Arietis	E.	95 59 29	2672	94 22 11	2655	92 44 30	2637	91 6 25	2619
19	Sun	W.	107 36 27	2803	109 10 51	2784	110 45 40	2763	112 20 56	2744
	Antares	W.	65 51 8	2475	67 32 57	2457	69 15 11	2438	70 57 52	2419
	Venus	W.	62 49 31	2732	64 25 29	2711	66 1 54	2691	67 38 46	2671
	α Pegasi	E.	44 22 19	3262	42 57 23	3296	41 33 7	3336	40 9 37	3384
	α Arietis	E.	82 49 56	2530	81 9 24	2512	79 28 27	2494	77 47 6	2477
20	Sun	W.	120 23 51	2644	122 1 46	2625	123 40 7	2606	125 18 54	2586
	Antares	W.	79 37 50	2327	81 23 10	2309	83 8 56	2291	84 55 8	2273
	Venus	W.	75 49 52	2571	77 29 27	2551	79 9 30	2531	80 50 0	2511
	α Aquilæ	W.	43 10 25	4776	44 10 21	4601	45 12 45	4441	46 17 29	4294
	α Arietis	E.	69 14 8	2390	67 30 19	2373	65 46 6	2357	64 1 30	2342
	Aldebaran	E.	99 35 3	2382	97 51 2	2363	96 6 34	2344	94 21 39	2326
21	Antares	W.	93 52 41	2187	95 41 28	2171	97 30 39	2155	99 20 14	2140
	Venus	W.	89 19 16	2418	91 2 25	2400	92 46 0	2382	94 30 0	2366
	α Aquilæ	W.	52 12 5	3727	53 28 24	3637	54 46 18	3556	56 5 40	3480
	Saturn	W.	34 32 24	2229	36 20 9	2209	38 8 23	2190	39 57 5	2173
	α Arietis	E.	55 12 58	2270	53 26 15	2258	51 39 14	2247	49 51 56	2236
	Aldebaran	E.	85 30 35	2240	83 43 7	2225	81 55 16	2210	80 7 3	2195
22	Antares	W.	108 33 46	2070	110 25 32	2057	112 17 37	2046	114 10 0	2035
	Venus	W.	103 15 51	2289	105 2 7	2275	106 48 43	2262	108 35 38	2249
	α Aquilæ	W.	63 1 44	3182	64 28 15	3134	65 55 43	3091	67 24 3	3052
	Saturn	W.	49 6 52	2095	50 57 59	2082	52 49 26	2069	54 41 13	2057
	α Arietis	E.	40 52 9	2204	39 3 47	2203	37 15 24	2204	35 27 3	2208
	Aldebaran	E.	71 0 39	2130	69 10 25	2118	67 19 54	2109	65 29 8	2099
23	Venus	W.	117 34 30	2198	119 23 0	2190	121 11 42	2183	123 0 35	2177
	α Aquilæ	W.	74 56 39	2901	76 28 57	2880	78 1 42	2860	79 34 52	2844
	Saturn	W.	64 4 24	2008	65 57 46	2001	67 51 19	1994	69 45 2	1988
	Fomalhaut	W.	43 30 13	2393	45 13 58	2360	46 58 30	2331	48 43 44	2306
	Aldebaran	E.	56 12 10	2067	54 20 20	2064	52 28 25	2062	50 36 27	2062
	Pollux	E.	99 42 36	1989	97 48 44	1982	95 54 41	1975	94 0 28	1970

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
24	α Aquilæ	W.	81° 8′ 23″	2831	82° 42′ 11″	2819	84° 16′ 14″	2810	85° 50′ 29″	2803
	Saturn	W.	71 38 55	1983	73 32 56	1979	75 27 3	1976	77 21 15	1974
	Fomalhaut	W.	50 29 35	2283	52 16 0	2263	54 2 54	2245	55 50 14	2231
	α Pegasi	W.	33 47 23	3271	35 12 8	3148	36 39 19	3042	38 8 40	2950
	Aldebaran	E.	48 44 29	2062	46 52 32	2064	45 0 38	2068	43 8 50	2075
	Pollux	E.	92 6 7	1965	90 11 38	1962	88 17 3	1958	86 22 23	1956
25	α Aquilæ	W.	93 42 49	2807	95 17 8	2815	96 51 17	2825	98 25 12	2838
	Saturn	W.	86 52 47	1974	88 47 3	1977	90 41 14	1980	92 35 20	1984
	Fomalhaut	W.	64 51 30	2184	66 40 21	2180	68 29 18	2178	70 18 18	2177
	α Pegasi	W.	45 59 48	2648	47 37 38	2609	49 16 21	2576	50 55 49	2548
	Aldebaran	E.	33 53 19	2141	32 3 22	2165	30 14 1	2192	28 25 22	2227
	Pollux	E.	76 48 34	1956	74 53 51	1960	72 59 13	1963	71 4 40	1967
	Regulus	E.	113 23 36	1968	111 29 12	1970	109 34 51	1974	107 40 35	1977
26	α Aquilæ	W.	106 9 35	2941	107 41 2	2971	109 11 51	3003	110 42 0	3038
	Saturn	W.	102 3 41	2018	103 56 47	2027	105 49 39	2037	107 42 15	2048
	Fomalhaut	W.	79 22 59	2193	81 11 37	2200	83 0 5	2208	84 48 21	2217
	α Pegasi	W.	59 21 10	2462	61 3 16	2455	62 45 33	2449	64 27 58	2446
	Pollux	E.	61 34 1	2000	59 40 27	2009	57 47 7	2019	55 54 2	2028
	Regulus	E.	98 11 14	2009	96 17 54	2018	94 24 48	2028	92 31 57	2038
27	Fomalhaut	W.	93 45 46	2277	95 32 19	2293	97 18 29	2309	99 4 15	2326
	α Pegasi	W.	73 0 11	2459	74 42 22	2466	76 24 23	2475	78 6 11	2485
	α Arietis	W.	29 30 26	2310	31 16 11	2301	33 2 9	2297	34 48 13	2296
	Pollux	E.	46 32 55	2090	44 41 40	2104	42 50 47	2119	41 0 17	2134
	Regulus	E.	83 11 59	2099	81 20 58	2113	79 30 18	2127	77 40 0	2142
	Mars	E.	110 52 6	2274	109 5 28	2289	107 19 12	2304	105 33 18	2320
28	α Pegasi	W.	86 31 11	2553	88 11 11	2569	89 50 49	2586	91 30 3	2605
	α Arietis	W.	43 37 47	2324	45 23 11	2335	47 8 20	2346	48 53 12	2359
	Pollux	E.	31 53 43	2216	30 5 40	2235	28 18 4	2252	26 30 54	2271
	Regulus	E.	68 34 27	2225	66 46 36	2242	64 59 11	2260	63 12 12	2278
	Mars	E.	96 49 39	2403	95 6 9	2422	93 23 5	2440	91 40 27	2458
	Sun	E.	135 13 25	2522	133 32 43	2541	131 52 27	2560	130 12 37	2579
29	α Pegasi	W.	99 39 35	2709	101 16 3	2732	102 52 1	2755	104 27 28	2780
	α Arietis	W.	57 32 41	2431	59 15 31	2448	60 57 58	2464	62 40 2	2481
	Aldebaran	W.	27 42 47	2600	29 21 42	2594	31 0 45	2591	32 39 52	2592
	Regulus	E.	54 24 7	2373	52 39 53	2392	50 56 7	2412	49 12 50	2432
	Mars	E.	83 13 54	2554	81 33 56	2574	79 54 25	2593	78 15 21	2612
	Sun	E.	122 0 5	2678	120 22 56	2698	118 46 13	2719	117 9 58	2738
30	α Arietis	W.	71 4 25	2566	72 44 6	2584	74 23 23	2601	76 2 17	2618
	Aldebaran	W.	40 54 4	2629	42 32 20	2639	44 10 22	2651	45 48 8	2663
	Regulus	E.	40 43 26	2533	39 2 58	2553	37 22 58	2573	35 43 26	2594
	Mars	E.	70 6 40	2711	68 30 15	2730	66 54 15	2750	65 18 41	2769
	Sun	E.	109 15 22	2840	107 41 46	2860	106 8 36	2880	104 35 51	2899
31	α Arietis	W.	84 10 55	2704	85 47 30	2720	87 23 43	2737	88 59 34	2753
	Aldebaran	W.	53 52 43	2729	55 28 44	2743	57 4 27	2756	58 39 52	2770
	Regulus	E.	27 33 0	2703	25 56 24	2726	24 20 19	2750	22 44 46	2778
	Mars	E.	57 26 59	2861	55 53 50	2878	54 21 3	2896	52 48 39	2913
	Sun	E.	96 58 17	2995	95 27 58	3013	93 58 1	3031	92 28 27	3048

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
24	α Aquilæ	W.	87° 24′ 53″	2799	88° 59′ 22″	2798	90° 33′ 53″	2798	92° 8′ 23″	2801
	Saturn	W.	79 15 31	1972	81 9 49	1971	83 4 9	1971	84 58 29	1972
	Fomalhaut	W.	57 37 56	2217	59 25 58	2206	61 14 16	2197	63 2 48	2190
	α Pegasi	W.	39 39 55	2871	41 12 51	2803	42 47 15	2744	44 22 57	2692
	Aldebaran	E.	41 17 12	2083	39 25 46	2093	37 34 36	2105	35 43 45	2122
	Pollux	E.	84 27 40	1955	82 32 54	1954	80 38 7	1954	78 43 20	1955
25	α Aquilæ	W.	99 58 51	2853	101 32 10	2871	103 5 6	2892	104 37 35	2915
	Saturn	W.	94 29 19	1969	96 23 10	1996	98 16 51	2002	100 10 22	2010
	Fomalhaut	W.	72 7 20	2178	73 56 21	2180	75 45 19	2183	77 34 12	2187
	α Pegasi	W.	52 35 56	2523	54 16 37	2503	55 57 46	2487	57 39 18	2472
	Aldebaran	E.	26 37 35	2270	24 50 51	2322	23 5 23	2387	21 21 29	2470
	Pollux	E.	69 10 14	1972	67 15 56	1978	65 21 47	1984	63 27 48	1992
	Regulus	E.	105 46 25	1982	103 52 23	1988	101 58 30	1994	100 4 47	2001
26	α Aquilæ	W.	112 11 26	3076	113 40 5	3118	115 7 53	3163	116 34 46	3212
	Saturn	W.	109 34 35	2059	111 26 38	2071	113 18 22	2083	115 9 47	2096
	Fomalhaut	W.	86 36 23	2228	88 24 9	2239	90 11 39	2250	91 58 52	2263
	α Pegasi	W.	66 10 27	2445	67 52 58	2446	69 35 27	2449	71 17 52	2453
	Pollux	E.	54 1 12	2039	52 8 39	2052	50 16 25	2064	48 24 30	2077
	Regulus	E.	90 39 22	2049	88 47 4	2060	86 55 3	2072	85 3 21	2085
27	Fomalhaut	W.	100 49 37	2344	102 34 33	2362	104 19 2	2382	106 3 3	2401
	α Pegasi	W.	79 47 46	2496	81 29 5	2509	83 10 6	2522	84 50 49	2537
	α Arietis	W.	36 34 19	2297	38 20 23	2301	40 6 21	2307	41 52 10	2315
	Pollux	E.	39 10 10	2159	37 20 27	2165	35 31 7	2182	33 42 12	2199
	Regulus	E.	75 50 5	2158	74 0 34	2174	72 11 27	2190	70 22 44	2207
	Mars	E.	103 47 47	2335	102 2 39	2351	100 17 54	2368	98 33 34	2386
28	α Pegasi	W.	93 8 51	2624	94 47 13	2643	96 25 9	2664	98 2 37	2687
	α Arietis	W.	50 37 46	2372	52 22 1	2386	54 5 56	2401	55 49 29	2416
	Pollux	E.	24 44 12	2290	22 57 58	2309	21 12 12	2330	19 26 56	2350
	Regulus	E.	61 25 40	2296	59 39 35	2315	57 53 58	2335	56 8 49	2353
	Mars	E.	89 58 15	2477	88 16 30	2496	86 35 11	2515	84 54 19	2535
	Sun	E.	128 33 13	2599	126 54 16	2618	125 15 45	2638	123 37 42	2657
29	α Pegasi	W.	106 2 22	2805	107 36 43	2831	109 10 31	2858	110 43 44	2885
	α Arietis	W.	64 21 42	2498	66 2 58	2515	67 43 51	2532	69 24 20	2549
	Aldebaran	W.	34 18 58	2596	35 57 59	2601	37 36 52	2610	39 15 34	2618
	Regulus	E.	47 30 1	2452	45 47 40	2472	44 5 47	2492	42 24 22	2512
	Mars	E.	76 36 43	2632	74 58 32	2652	73 20 48	2672	71 43 31	2692
	Sun	E.	115 34 9	2759	113 58 47	2779	112 23 52	2800	110 49 24	2820
30	α Arietis	W.	77 40 47	2635	79 18 54	2653	80 56 37	2670	82 33 57	2687
	Aldebaran	W.	47 25 38	2675	49 2 51	2689	50 39 46	2701	52 16 24	2716
	Regulus	E.	34 4 23	2615	32 25 48	2636	30 47 42	2658	29 10 6	2681
	Mars	E.	63 43 32	2788	62 8 48	2806	60 34 28	2825	59 0 32	2842
	Sun	E.	103 3 31	2919	101 31 36	2939	100 0 6	2958	98 29 0	2976
31	α Arietis	W.	90 35 4	2769	92 10 13	2785	93 45 1	2801	95 19 28	2816
	Aldebaran	W.	60 14 59	2784	61 49 48	2798	63 24 19	2811	64 58 32	2825
	Regulus	E.	21 9 49	2806	19 35 29	2838	18 1 50	2873	16 28 57	2913
	Mars	E.	51 16 37	2930	49 44 56	2946	48 13 36	2962	46 42 36	2978
	Sun	E.	90 59 14	3066	89 30 23	3083	88 1 53	3101	86 33 44	3116

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	14 26 4.06	9.801	S. 14 28 42.3	–48.06	16 9.89	66.96	16 18.23	0.054
Mon.	2	14 29 59.72	9.837	14 47 48.9	47.49	16 10.13	67.08	16 19.13	+0.019
Tues.	3	14 33 56.20	9.872	15 6 41.3	46.88	16 10.37	67.19	16 19.21	–0.016
Wed.	4	14 37 53.52	9.907	15 25 18.9	46.26	16 10.61	67.31	16 18.45	0.051
Thur.	5	14 41 51.68	9.942	15 43 41.4	45.61	16 10.85	67.42	16 16.85	0.086
Frid.	6	14 45 50.68	9.977	16 1 48.4	44.95	16 11.08	67.54	16 14.41	0.121
Sat.	7	14 49 50.54	10.012	16 19 39.4	44.27	16 11.31	67.66	16 11.11	0.156
Sun.	8	14 53 51.25	10.047	16 37 13.9	43.58	16 11.54	67.78	16 6.97	0.191
Mon.	9	14 57 52.80	10.082	16 54 31.5	42.87	16 11.77	67.90	16 1.98	0.226
Tues.	10	15 1 55.21	10.118	17 11 31.8	42.14	16 12.00	68.02	15 56.14	0.262
Wed.	11	15 5 58.47	10.153	17 28 14.4	41.39	16 12.23	68.14	15 49.46	0.297
Thur.	12	15 10 2.57	10.189	17 44 38.8	40.63	16 12.45	68.26	15 41.94	0.332
Frid.	13	15 14 7.52	10.224	18 0 44.6	39.85	16 12.67	68.38	15 33.57	0.367
Sat.	14	15 18 13.30	10.258	18 16 31.5	39.06	16 12.89	68.50	15 24.37	0.401
Sun.	15	15 22 19.91	10.292	18 31 59.1	38.24	16 13.11	68.62	15 14.35	0.435
Mon.	16	15 26 27.33	10.326	18 47 6.9	37.40	16 13.32	68.74	15 3.50	0.469
Tues.	17	15 30 35.58	10.360	19 1 54.6	36.55	16 13.53	68.86	14 51.83	0.503
Wed.	18	15 34 44.66	10.394	19 16 21.7	35.69	16 13.74	68.97	14 39.35	0.537
Thur.	19	15 38 54.54	10.428	19 30 27.9	34.81	16 13.94	69.09	14 26.06	0.571
Frid.	20	15 43 5.23	10.461	19 44 12.9	33.90	16 14.14	69.20	14 11.97	0.604
Sat.	21	15 47 16.72	10.494	19 57 36.4	33.00	16 14.33	69.31	13 57.08	0.637
Sun.	22	15 51 29.00	10.527	20 10 38.0	32.08	16 14.52	69.42	13 41.41	0.670
Mon.	23	15 55 42.06	10.560	20 23 17.3	31.15	16 14.71	69.53	13 24.95	0.703
Tues.	24	15 59 55.90	10.592	20 35 34.0	30.22	16 14.89	69.64	13 7.71	0.735
Wed.	25	16 4 10.51	10.625	20 47 27.8	29.26	16 15.06	69.74	12 49.70	0.767
Thur.	26	16 8 25.89	10.657	20 58 58.3	28.28	16 15.23	69.84	12 30.94	0.799
Frid.	27	16 12 42.01	10.687	21 10 5.4	27.29	16 15.40	69.94	12 11.43	0.829
Sat.	28	16 16 58.86	10.717	21 20 48.5	26.29	16 15.56	70.04	11 51.19	0.859
Sun.	29	16 21 16.42	10.746	21 31 7.4	25.28	16 15.71	70.14	11 30.24	0.888
Mon.	30	16 25 34.68	10.775	21 41 1.9	24.24	16 15.86	70.23	11 8.60	0.917
Tues.	31	16 29 53.64	10.803	S. 21 50 31.5	–23.20	16 16.01	70.32	10 46.27	0.945

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

— prefixed to the hourly change of declination, indicates that north declinations are decreasing, and south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	14 26 6.72	9.802	S. 14 28 55.4	–48.06	16 18.25	0.054	14 42 24.97
Mon.	2	14 30 2.39	9.837	14 48 1.9	47.48	16 19.14	+0.019	14 46 21.53
Tues.	3	14 33 58.88	9.872	15 6 54.1	46.87	16 19.21	–0.016	14 50 18.09
Wed.	4	14 37 56.21	9.907	15 25 31.5	46.25	16 18.44	0.051	14 54 14.65
Thur.	5	14 41 54.37	9.942	15 43 53.8	45.60	16 16.83	0.086	14 58 11.20
Frid.	6	14 45 53.38	9.977	16 2 0.6	44.95	16 14.38	0.121	15 2 7.76
Sat.	7	14 49 53.24	10.012	16 19 51.4	44.27	16 11.07	0.156	15 6 4.31
Sun.	8	14 53 53.95	10.047	16 37 25.6	43.57	16 6.92	0.191	15 10 0.87
Mon.	9	14 57 55.50	10.082	16 54 43.0	42.86	16 1.92	0.226	15 13 57.42
Tues.	10	15 1 57.90	10.118	17 11 43.1	42.13	15 56.08	0.262	15 17 53.98
Wed.	11	15 6 1.15	10.153	17 28 25.4	41.38	15 49.39	0.297	15 21 50.54
Thur.	12	15 10 5.24	10.188	17 44 49.5	40.62	15 41.86	0.332	15 25 47.10
Frid.	13	15 14 10.17	10.223	18 0 55.0	39.84	15 33.48	0.367	15 29 43.65
Sat.	14	15 18 15.94	10.257	18 16 41.6	39.05	15 24.27	0.401	15 33 40.21
Sun.	15	15 22 22.53	10.291	18 32 8.9	38.23	15 14.23	0.435	15 37 36.76
Mon.	16	15 26 29.93	10.325	18 47 16.4	37.39	15 3.39	0.469	15 41 33.32
Tues.	17	15 30 38.16	10.359	19 2 3.8	36.55	14 51.71	0.503	15 45 29.87
Wed.	18	15 34 47.21	10.393	19 16 30.5	35.68	14 39.23	0.537	15 49 26.44
Thur.	19	15 38 57.06	10.427	19 30 36.4	34.80	14 25.93	0.571	15 53 22.99
Frid.	20	15 43 7.72	10.460	19 44 21.1	33.90	14 11.83	0.604	15 57 19.55
Sat.	21	15 47 19.18	10.493	19 57 44.3	33.00	13 56.93	0.637	16 1 16.11
Sun.	22	15 51 31.42	10.526	20 10 45.5	32.08	13 41.25	0.670	16 5 12.67
Mon.	23	15 55 44.44	10.559	20 23 24.4	31.15	13 24.78	0.703	16 9 9.22
Tues.	24	15 59 58.23	10.591	20 35 40.7	30.21	13 7.55	0.735	16 13 5.78
Wed.	25	16 4 12.80	10.623	20 47 34.1	29.25	12 49.54	0.767	16 17 2.34
Thur.	26	16 8 28.13	10.655	20 59 4.3	28.27	12 30.77	0.799	16 20 58.90
Frid.	27	16 12 44.20	10.685	21 10 11.0	27.28	12 11.26	0.829	16 24 55.46
Sat.	28	16 17 0.99	10.715	21 20 53.8	26.28	11 51.03	0.859	16 28 52.02
Sun.	29	16 21 18.50	10.744	21 31 12.4	25.27	11 30.07	0.888	16 32 48.57
Mon.	30	16 25 36.70	10.773	21 41 6.5	24.24	11 8.43	0.917	16 36 45.13
Tues.	31	16 29 55.59	10.801	S. 21 50 35.8	–23.19	10 46.10	0.945	16 40 41.69

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon

Diff. for 1 hour. $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	305	218 55 29.0	54 55.5	150.26	+0.55	9.9964497	−45.0	9 16 3.68
2	306	219 55 36.3	55 2.7	150.35	0.50	.9963420	44.6	9 12 7.77
3	307	220 55 45.7	55 12.0	150.44	0.44	.9962354	44.2	9 8 11.85
4	308	221 55 57.2	55 23.3	150.52	0.35	.9961296	43.9	9 4 15.94
5	309	222 56 10.7	55 36.7	150.61	0.25	.9960246	43.6	9 0 20.03
6	310	223 56 26.2	55 52.1	150.69	+0.13	.9959203	43.3	8 56 24.12
7	311	224 56 43.7	56 9.5	150.77	0.00	.9958166	43.0	8 52 28.21
8	312	225 57 3.1	56 28.8	150.84	−0.13	.9957136	42.7	8 48 32.30
9	313	226 57 24.2	56 49.7	150.91	0.26	.9956112	42.4	8 44 36.39
10	314	227 57 46.9	57 12.2	150.98	0.37	.9955095	42.2	8 40 40.48
11	315	228 58 11.2	57 36.3	151.05	0.46	.9954085	41.8	8 36 44.56
12	316	229 58 37.0	58 2.0	151.11	0.52	.9953084	41.4	8 32 48.65
13	317	230 59 4.3	58 29.1	151.17	0.54	.9952093	41.0	8 28 52.74
14	318	231 59 33.0	58 57.6	151.23	0.54	.9951112	40.6	8 24 56.83
15	319	232 60 3.1	59 27.5	151.28	0.50	.9950142	40.1	8 21 0.93
16	320	233 60 34.4	59 58.7	151.33	0.46	.9949185	39.5	8 17 5.02
17	321	235 1 6.9	0 31.1	151.38	0.38	.9948243	38.8	8 13 9.11
18	322	236 1 40.6	1 4.7	151.43	0.29	.9947318	38.1	8 9 13.20
19	323	237 2 15.5	1 39.4	151.48	0.17	.9946412	37.3	8 5 17.28
20	324	238 2 51.7	2 15.4	151.53	−0.04	.9945525	36.5	8 1 21.37
21	325	239 3 29.1	2 52.6	151.58	+0.11	.9944659	35.6	7 57 25.46
22	326	240 4 7.8	3 31.2	151.64	0.24	.9943814	34.7	7 53 29.55
23	327	241 4 47.8	4 11.0	151.69	0.37	.9942990	33.8	7 49 33.64
24	328	242 5 29.1	4 52.1	151.75	0.48	.9942189	32.8	7 45 37.73
25	329	243 6 11.9	5 34.7	151.81	0.57	.9941413	31.8	7 41 41.82
26	330	244 6 56.0	6 18.6	151.87	0.63	.9940660	30.8	7 37 45.91
27	331	245 7 41.5	7 4.0	151.93	0.65	.9939930	29.9	7 33 49.98
28	332	246 8 28.4	7 50.7	151.98	0.65	.9939223	29.0	7 29 54.07
29	333	247 9 16.7	8 38.8	152.04	0.61	.9938538	28.1	7 25 58.16
30	334	248 10 6.5	9 28.4	152.10	0.55	.9937874	27.3	7 22 2.25
31	335	249 10 57.7	10 19.4	152.16	+0.46	9.9937229	−26.5	7 18 6.33

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour. —9ˢ.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 20.1	15 14.1	56 10.2	−1.93	55 48.1	−1.76	19 5.7	1.92	22.0
2	15 8.6	15 3.7	55 28.0	1.59	55 9.9	1.41	19 49.8	1.77	23.0
3	14 59.4	14 55.6	54 54.0	1.24	54 40.2	1.06	20 31.0	1.67	24.0
4	14 52.4	14 49.8	54 28.6	0.89	54 18.9	0.72	21 10.5	1.63	25.0
5	14 47.7	14 46.1	54 11.1	0.57	54 5.2	0.42	21 49.4	1.62	26.0
6	14 44.9	14 44.2	54 1.0	0.28	53 58.4	−0.15	22 28.8	1.67	27.0
7	14 43.9	14 44.0	53 57.3	−0.03	53 57.7	+0.08	23 9.8	1.75	28.0
8	14 44.5	14 45.3	53 59.3	+0.19	54 2.3	0.30	23 53.1	1.86	29.0
9	14 46.4	14 47.9	54 6.5	0.40	54 11.9	0.50	6		0.3
10	14 49.7	14 51.8	54 18.4	0.60	54 26.2	0.70	0 39.4	2.00	1.3
11	14 54.3	14 57.1	54 35.2	0.80	54 45.5	0.91	1 28.9	2.12	2.3
12	15 0.2	15 3.7	54 57.1	1.02	55 10.0	1.14	2 21.2	2.22	3.3
13	15 7.6	15 11.9	55 24.4	1.26	55 40.2	1.38	3 15.1	2.27	4.3
14	15 16.6	15 21.7	55 57.5	1.50	56 16.1	1.61	4 9.4	2.25	5.3
15	15 27.2	15 33.0	56 36.2	1.73	56 57.6	1.83	5 2.6	2.18	6.3
16	15 39.2	15 45.6	57 20.2	1.93	57 43.8	2.00	5 54.0	2.10	7.3
17	15 52.2	15 59.0	58 8.1	2.05	58 32.9	2.07	6 43.7	2.04	8.3
18	16 5.7	16 12.4	58 57.8	2.05	59 22.1	1.99	7 32.2	2.01	9.3
19	16 18.7	16 24.6	59 45.4	1.88	60 6.9	1.71	8 20.6	2.03	10.3
20	16 29.8	16 34.2	60 26.1	1.48	60 42.2	1.20	9 10.4	2.12	11.3
21	16 37.6	16 40.0	60 54.8	0.89	61 3.6	+0.56	10 2.9	2.26	12.3
22	16 41.2	16 41.2	61 8.1	+0.19	61 8.0	−0.20	10 59.3	2.44	13.3
23	16 39.9	16 37.3	61 3.3	−0.60	60 53.6	1.00	12 0.0	2.61	14.3
24	16 33.4	16 28.5	60 39.4	1.35	60 21.3	1.67	13 3.9	2.70	15.3
25	16 22.6	16 15.9	59 59.6	1.93	59 35.2	2.13	14 8.4	2.65	16.3
26	16 8.7	16 1.1	59 8.6	2.28	58 40.6	2.38	15 10.4	2.49	17.3
27	15 53.2	15 45.3	58 11.7	2.41	57 42.9	2.39	16 7.6	2.27	18.3
28	15 37.6	15 30.2	57 14.5	2.33	56 47.1	2.22	16 59.2	2.04	19.3
29	15 23.1	15 16.5	56 21.2	2.09	55 57.1	1.93	17 45.9	1.86	20.3
30	15 10.5	15 5.1	55 35.1	1.75	55 15.2	1.55	18 28.7	1.73	21.3
31	15 0.4	14 56.3	54 57.8	−1.35	54 42.8	−1.14	19 9.1	1.65	22.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 11 29.33	2.1520	N.21 31 12.8	10.224	0	10 47 13.88	1.8632	N.11 57 55.8	13.224
1	9 13 38.23	2.1446	21 20 56.6	10.316	1	10 49 5.54	1.8589	11 44 41.2	13.261
2	9 15 46.68	2.1372	21 10 34.9	10.406	2	10 50 56.95	1.8548	11 31 24.5	13.297
3	9 17 54.69	2.1298	21 0 7.9	10.494	3	10 52 48.11	1.8507	11 18 5.6	13.332
4	9 20 2.26	2.1225	20 49 35.6	10.581	4	10 54 39.03	1.8467	11 4 44.6	13.366
5	9 22 9.40	2.1153	20 38 58.2	10.666	5	10 56 29.71	1.8427	10 51 21.7	13.398
6	9 24 16.10	2.1081	20 28 15.7	10.750	6	10 58 20.15	1.8388	10 37 56.8	13.430
7	9 26 22.37	2.1009	20 17 28.2	10.833	7	11 0 10.36	1.8350	10 24 30.0	13.462
8	9 28 28.21	2.0938	20 6 35.7	10.916	8	11 2 0.35	1.8313	10 11 1.4	13.493
9	9 30 33.63	2.0868	19 55 38.3	10.997	9	11 3 50.12	1.8277	9 57 30.9	13.523
10	9 32 38.62	2.0798	19 44 36.1	11.075	10	11 5 39.67	1.8241	9 43 58.7	13.551
11	9 34 43.20	2.0728	19 33 29.3	11.153	11	11 7 29.01	1.8206	9 30 24.8	13.579
12	9 36 47.36	2.0658	19 22 17.8	11.230	12	11 9 18.14	1.8172	9 16 49.2	13.607
13	9 38 51.10	2.0590	19 11 1.7	11.305	13	11 11 7.07	1.8138	9 3 12.0	13.633
14	9 40 54.44	2.0522	18 59 41.2	11.378	14	11 12 55.80	1.8106	8 49 33.3	13.658
15	9 42 57.37	2.0455	18 48 16.3	11.451	15	11 14 44.34	1.8074	8 35 53.1	13.683
16	9 44 59.90	2.0388	18 36 47.0	11.523	16	11 16 32.69	1.8043	8 22 11.4	13.706
17	9 47 2.03	2.0322	18 25 13.5	11.593	17	11 18 20.86	1.8013	8 8 28.3	13.729
18	9 49 3.77	2.0257	18 13 35.8	11.662	18	11 20 8.85	1.7983	7 54 43.9	13.752
19	9 51 5.12	2.0192	18 1 54.0	11.730	19	11 21 56.66	1.7954	7 40 58.1	13.773
20	9 53 6.08	2.0128	17 50 8.2	11.798	20	11 23 44.30	1.7927	7 27 11.1	13.793
21	9 55 6.66	2.0066	17 38 18.3	11.864	21	11 25 31.78	1.7900	7 13 22.9	13.813
22	9 57 6.87	2.0003	17 26 24.5	11.928	22	11 27 19.10	1.7873	6 59 33.5	13.832
23	9 59 6.70	1.9941	N.17 14 27.0	11.990	23	11 29 6.26	1.7848	N. 6 45 43.0	13.850
	MONDAY 2.					WEDNESDAY 4.			
0	10 1 6.16	1.9880	N.17 2 25.7	12.052	0	11 30 53.27	1.7823	N. 6 31 51.5	13.868
1	10 3 5.26	1.9820	16 50 20.7	12.113	1	11 32 40.13	1.7798	6 17 58.9	13.884
2	10 5 4.00	1.9760	16 38 12.1	12.173	2	11 34 26.85	1.7775	6 4 5.4	13.900
3	10 7 2.38	1.9701	16 25 59.9	12.232	3	11 36 13.43	1.7752	5 50 10.9	13.916
4	10 9 0.41	1.9643	16 13 44.2	12.289	4	11 37 59.87	1.7730	5 36 15.5	13.930
5	10 10 58.10	1.9585	16 1 25.2	12.345	5	11 39 46.19	1.7709	5 22 19.3	13.943
6	10 12 55.44	1.9528	15 49 2.8	12.401	6	11 41 32.38	1.7688	5 8 22.3	13.956
7	10 14 52.44	1.9472	15 36 37.1	12.456	7	11 43 18.45	1.7669	4 54 24.5	13.968
8	10 16 49.11	1.9417	15 24 8.1	12.509	8	11 45 4.41	1.7651	4 40 26.1	13.979
9	10 18 45.44	1.9362	15 11 36.0	12.561	9	11 46 50.26	1.7633	4 26 27.0	13.990
10	10 20 41.45	1.9308	14 59 0.8	12.612	10	11 48 36.00	1.7615	4 12 27.2	14.001
11	10 22 37.14	1.9255	14 46 22.6	12.663	11	11 50 21.63	1.7598	3 58 26.9	14.010
12	10 24 32.51	1.9203	14 33 41.3	12.712	12	11 52 7.17	1.7583	3 44 26.0	14.019
13	10 26 27.57	1.9151	14 20 57.1	12.760	13	11 53 52.62	1.7567	3 30 24.6	14.027
14	10 28 22.32	1.9100	14 8 10.1	12.807	14	11 55 37.97	1.7552	3 16 22.8	14.034
15	10 30 16.77	1.9050	13 55 20.3	12.853	15	11 57 23.24	1.7539	3 2 20.6	14.040
16	10 32 10.92	1.9000	13 42 27.7	12.898	16	11 59 8.43	1.7526	2 48 18.0	14.046
17	10 34 4.77	1.8951	13 29 32.5	12.942	17	12 0 53.55	1.7513	2 34 15.1	14.050
18	10 35 58.33	1.8903	13 16 34.7	12.985	18	12 2 38.59	1.7501	2 20 12.0	14.054
19	10 37 51.61	1.8856	13 3 34.3	13.028	19	12 4 23.56	1.7491	2 6 8.6	14.058
20	10 39 44.61	1.8810	12 50 31.4	13.069	20	12 6 8.48	1.7481	1 52 5.0	14.061
21	10 41 37.33	1.8764	12 37 26.0	13.110	21	12 7 53.34	1.7471	1 38 1.3	14.063
22	10 43 29.78	1.8719	12 24 18.2	13.149	22	12 9 38.14	1.7463	1 23 57.5	14.064
23	10 45 21.96	1.8675	12 11 8.1	13.187	23	12 11 22.90	1.7456	1 9 53.6	14.065
24	10 47 13.88	1.8632	N.11 57 55.8	13.224	24	12 13 7.61	1.7449	N. 0 55 49.7	14.065

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 5.					SATURDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 13 7.61	1.7449	N. 0 55 49.7	14.065	0	13 37 22.70	1.7913	S. 10 5 29.8	13.209
1	12 14 52.28	1.7443	0 41 45.8	14.064	1	13 39 10.25	1.7938	10 18 41.3	13.173
2	12 16 36.92	1.7437	0 27 42.0	14.062	2	13 40 57.96	1.7964	10 31 50.6	13.136
3	12 18 21.52	1.7431	N. 0 13 38.4	14.059	3	13 42 45.83	1.7991	10 44 57.6	13.098
4	12 20 6.09	1.7427	S. 0 0 25.1	14.057	4	13 44 33.86	1.8019	10 58 2.4	13.060
5	12 21 50.64	1.7423	0 14 28.4	14.053	5	13 46 22.06	1.8047	11 11 4.8	13.020
6	12 23 35.17	1.7420	0 28 31.5	14.049	6	13 48 10.42	1.8075	11 24 4.8	12.980
7	12 25 19.68	1.7418	0 42 34.3	14.044	7	13 49 58.96	1.8105	11 37 2.4	12.939
8	12 27 4.19	1.7417	0 56 36.7	14.038	8	13 51 47.68	1.8134	11 49 57.5	12.897
9	12 28 48.69	1.7416	1 10 38.8	14.032	9	13 53 36.57	1.8164	12 2 50.0	12.854
10	12 30 33.19	1.7416	1 24 40.5	14.024	10	13 55 25.65	1.8196	12 15 39.9	12.810
11	12 32 17.69	1.7416	1 38 41.7	14.016	11	13 57 14.92	1.8227	12 28 27.2	12.766
12	12 34 2.19	1.7417	1 52 42.4	14.008	12	13 59 4.37	1.8259	12 41 11.8	12.721
13	12 35 46.70	1.7420	2 6 42.6	13.998	13	14 0 54.02	1.8292	12 53 53.7	12.674
14	12 37 31.23	1.7423	2 20 42.2	13.988	14	14 2 43.87	1.8325	13 6 32.7	12.627
15	12 39 15.78	1.7427	2 34 41.2	13.978	15	14 4 33.91	1.8358	13 19 8.9	12.580
16	12 41 0.35	1.7431	2 48 39.5	13.966	16	14 6 24.16	1.8393	13 31 42.3	12.532
17	12 42 44.95	1.7435	3 2 37.1	13.953	17	14 8 14.62	1.8427	13 44 12.7	12.481
18	12 44 29.57	1.7440	3 16 33.9	13.940	18	14 10 5.28	1.8462	13 56 40.0	12.430
19	12 46 14.23	1.7447	3 30 29.9	13.927	19	14 11 56.16	1.8498	14 9 4.3	12.379
20	12 47 58.93	1.7454	3 44 25.1	13.913	20	14 13 47.25	1.8534	14 21 25.5	12.328
21	12 49 43.68	1.7462	3 58 19.4	13.898	21	14 15 38.56	1.8570	14 33 43.6	12.275
22	12 51 28.47	1.7470	4 12 12.8	13.882	22	14 17 30.09	1.8607	14 45 58.5	12.221
23	12 53 13.32	1.7479	S. 4 26 5.2	13.865	23	14 19 21.85	1.8645	S. 14 58 10.1	12.166
	FRIDAY 6.					SUNDAY 8.			
0	12 54 58.22	1.7488	S. 4 39 56.6	13.848	0	14 21 13.83	1.8683	S. 15 10 18.4	12.110
1	12 56 43.18	1.7498	4 53 47.0	13.830	1	14 23 6.04	1.8722	15 22 23.3	12.053
2	12 58 28.20	1.7509	5 7 36.2	13.811	2	14 24 58.49	1.8762	15 34 24.8	11.996
3	13 0 13.29	1.7521	5 21 24.3	13.792	3	14 26 51.18	1.8801	15 46 22.9	11.938
4	13 1 58.45	1.7533	5 35 11.2	13.771	4	14 28 44.10	1.8841	15 58 17.4	11.878
5	13 3 43.69	1.7545	5 48 56.8	13.750	5	14 30 37.27	1.8881	16 10 8.3	11.818
6	13 5 29.00	1.7559	6 2 41.2	13.728	6	14 32 30.68	1.8921	16 21 55.6	11.757
7	13 7 14.40	1.7574	6 16 24.2	13.706	7	14 34 24.33	1.8963	16 33 39.2	11.695
8	13 8 59.89	1.7589	6 30 5.9	13.683	8	14 36 18.24	1.9006	16 45 19.0	11.633
9	13 10 45.47	1.7604	6 43 46.2	13.659	9	14 38 12.40	1.9048	16 56 55.1	11.560
10	13 12 31.14	1.7620	6 57 25.0	13.634	10	14 40 6.81	1.9091	17 8 27.3	11.504
11	13 14 16.91	1.7637	7 11 2.3	13.609	11	14 42 1.49	1.9135	17 19 55.6	11.438
12	13 16 2.79	1.7655	7 24 38.1	13.583	12	14 43 56.43	1.9179	17 31 19.9	11.372
13	13 17 48.77	1.7673	7 38 12.3	13.556	13	14 45 51.63	1.9223	17 42 40.2	11.304
14	13 19 34.86	1.7692	7 51 44.8	13.528	14	14 47 47.10	1.9267	17 53 56.4	11.236
15	13 21 21.07	1.7711	8 5 15.6	13.499	15	14 49 42.83	1.9311	18 5 8.5	11.167
16	13 23 7.39	1.7731	8 18 44.7	13.470	16	14 51 38.83	1.9356	18 16 16.4	11.097
17	13 24 53.84	1.7751	8 32 12.0	13.441	17	14 53 35.10	1.9402	18 27 20.1	11.025
18	13 26 40.41	1.7772	8 45 37.6	13.410	18	14 55 31.65	1.9448	18 38 19.4	10.952
19	13 28 27.11	1.7794	8 59 1.2	13.378	19	14 57 28.48	1.9494	18 49 14.3	10.878
20	13 30 13.94	1.7817	9 12 22.9	13.346	20	14 59 25.58	1.9540	19 0 4.8	10.805
21	13 32 0.91	1.7841	9 25 42.7	13.313	21	15 1 22.96	1.9587	19 10 50.9	10.730
22	13 33 48.03	1.7865	9 39 0.5	13.279	22	15 3 20.62	1.9634	19 21 32.4	10.654
23	13 35 35.29	1.7889	9 52 16.2	13.244	23	15 5 18.57	1.9682	19 32 9.3	10.577
24	13 37 22.70	1.7913	S. 10 5 29.8	13.209	24	15 7 16.80	1.9730	S. 19 42 41.6	10.499

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 9.					**WEDNESDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 7 16.80	1.9730	S. 19 42 41.6	10.499	0	16 47 43.33	2.2099	S. 26 17 57.1	5.596
1	15 9 15.32	1.9778	19 53 9.2	10.419	1	16 49 56.06	2.2144	26 23 29.1	5.471
2	15 11 14.13	1.9826	20 3 31.9	10.338	2	16 52 9.06	2.2189	26 28 53.6	5.345
3	15 13 13.23	1.9874	20 13 49.8	10.258	3	16 54 22.33	2.2233	26 34 10.5	5.217
4	15 15 12.62	1.9923	20 24 2.9	10.176	4	16 56 35.85	2.2276	26 39 19.7	5.089
5	15 17 12.30	1.9972	20 34 11.0	10.093	5	16 58 49.63	2.2319	26 44 21.2	4.961
6	15 19 12.28	2.0022	20 44 14.0	10.009	6	17 1 3.67	2.2361	26 49 15.0	4.833
7	15 21 12.56	2.0071	20 54 12.0	9.924	7	17 3 17.96	2.2402	26 54 1.1	4.704
8	15 23 13.13	2.0120	21 4 4.9	9.838	8	17 5 32.49	2.2443	26 58 39.5	4.575
9	15 25 14.00	2.0170	21 13 52.6	9.752	9	17 7 47.27	2.2483	27 3 10.1	4.444
10	15 27 15.17	2.0220	21 23 35.1	9.664	10	17 10 2.29	2.2522	27 7 32.8	4.311
11	15 29 16.64	2.0270	21 33 12.2	9.575	11	17 12 17.54	2.2561	27 11 47.4	4.177
12	15 31 18.41	2.0320	21 42 44.0	9.485	12	17 14 33.03	2.2600	27 15 54.0	4.042
13	15 33 20.48	2.0371	21 52 10.4	9.394	13	17 16 48.75	2.2638	27 19 52.4	3.906
14	15 35 22.86	2.0422	22 1 31.3	9.302	14	17 19 4.69	2.2675	27 23 42.7	3.771
15	15 37 25.54	2.0473	22 10 46.6	9.208	15	17 21 20.85	2.2711	27 27 24.9	3.635
16	15 39 28.53	2.0524	22 19 56.3	9.114	16	17 23 37.23	2.2747	27 30 58.9	3.498
17	15 41 31.82	2.0574	22 29 0.3	9.020	17	17 25 53.82	2.2782	27 34 24.6	3.360
18	15 43 35.41	2.0625	22 37 58.7	8.925	18	17 28 10.61	2.2816	27 37 42.1	3.222
19	15 45 39.31	2.0676	22 46 51.3	8.828	19	17 30 27.61	2.2850	27 40 51.3	3.083
20	15 47 43.52	2.0726	22 55 38.0	8.730	20	17 32 44.81	2.2882	27 43 52.1	2.943
21	15 49 48.03	2.0777	23 4 18.8	8.631	21	17 35 2.20	2.2914	27 46 44.5	2.803
22	15 51 52.85	2.0828	23 12 53.7	8.531	22	17 37 19.78	2.2945	27 49 28.5	2.663
23	15 53 57.97	2.0879	S. 23 21 22.5	8.430	23	17 39 37.54	2.2976	S. 27 52 4.0	2.522
	TUESDAY 10.					**THURSDAY 12.**			
0	15 56 3.40	2.0931	S. 23 29 45.3	8.329	0	17 41 55.49	2.3006	S. 27 54 31.1	2.381
1	15 58 9.14	2.0982	23 38 2.0	8.226	1	17 44 13.61	2.3034	27 56 49.7	2.238
2	16 0 15.18	2.1032	23 46 12.4	8.122	2	17 46 31.90	2.3062	27 58 59.7	2.094
3	16 2 21.52	2.1082	23 54 16.6	8.018	3	17 48 50.36	2.3089	28 1 1.0	1.950
4	16 4 28.17	2.1133	24 2 14.5	7.912	4	17 51 8.97	2.3115	28 2 53.7	1.807
5	16 6 35.12	2.1184	24 10 6.0	7.804	5	17 53 27.74	2.3141	28 4 37.8	1.663
6	16 8 42.38	2.1235	24 17 51.0	7.696	6	17 55 46.66	2.3165	28 6 13.2	1.518
7	16 10 49.94	2.1285	24 25 29.5	7.588	7	17 58 5.72	2.3188	28 7 39.9	1.373
8	16 12 57.80	2.1335	24 33 1.5	7.478	8	18 0 24.92	2.3211	28 8 57.9	1.227
9	16 15 5.96	2.1385	24 40 26.9	7.368	9	18 2 44.26	2.3233	28 10 7.1	1.080
10	16 17 14.42	2.1435	24 47 45.7	7.257	10	18 5 3.72	2.3253	28 11 7.5	0.933
11	16 19 23.18	2.1485	24 54 57.7	7.145	11	18 7 23.30	2.3273	28 11 59.1	0.786
12	16 21 32.23	2.1534	25 2 3.0	7.032	12	18 9 43.00	2.3293	28 12 41.8	0.638
13	16 23 41.58	2.1583	25 9 1.5	6.917	13	18 12 2.81	2.3311	28 13 15.6	0.490
14	16 25 51.22	2.1632	25 15 53.0	6.801	14	18 14 22.73	2.3329	28 13 40.6	0.342
15	16 28 1.15	2.1680	25 22 37.6	6.685	15	18 16 42.75	2.3345	28 13 56.7	0.193
16	16 30 11.37	2.1728	25 29 15.2	6.568	16	18 19 2.86	2.3360	28 14 3.8	−0.044
17	16 32 21.88	2.1776	25 35 45.7	6.449	17	18 21 23.06	2.3374	28 14 2.0	+0.104
18	16 34 32.68	2.1823	25 42 9.1	6.330	18	18 23 43.34	2.3387	28 13 51.3	0.253
19	16 36 43.76	2.1870	25 48 25.3	6.210	19	18 26 3.70	2.3399	28 13 31.6	0.403
20	16 38 55.12	2.1917	25 54 34.3	6.090	20	18 28 24.13	2.3410	28 13 2.9	0.553
21	16 41 6.76	2.1963	26 0 36.1	5.969	21	18 30 44.62	2.3421	28 12 25.2	0.703
22	16 43 18.68	2.2009	26 6 30.6	5.846	22	18 33 5.18	2.3431	28 11 38.5	0.853
23	16 45 30.87	2.2054	26 12 17.6	5.721	23	18 35 25.79	2.3439	28 10 42.8	1.003
24	16 47 43.33	2.2099	S. 26 17 57.1	5.596	24	18 37 46.45	2.3447	S. 28 9 38.1	1.154

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 13.					**SUNDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 37 46.45	2.3447	S.28 9 38.1	1.154	0	20 29 32.46	2.2841	S.24 22 26.5	8.195
1	18 40 7.16	2.3454	28 8 24.3	1.305	1	20 31 49.42	2.2813	24 14 10.7	8.331
2	18 42 27.90	2.3460	28 7 1.5	1.456	2	20 34 6.22	2.2785	24 5 46.8	8.467
3	18 44 48.67	2.3465	28 5 29.6	1.607	3	20 36 22.85	2.2757	23 57 14.7	8.602
4	18 47 9.47	2.3469	28 3 48.7	1.758	4	20 38 39.31	2.2729	23 48 34.6	8.735
5	18 49 30.29	2.3471	28 1 58.7	1.908	5	20 40 55.60	2.2701	23 39 46.5	8.869
6	18 51 51.12	2.3472	27 59 59.7	2.059	6	20 43 11.72	2.2672	23 30 50.3	9.002
7	18 54 11.96	2.3473	27 57 51.6	2.211	7	20 45 27.67	2.2643	23 21 46.2	9.133
8	18 56 32.80	2.3474	27 55 34.4	2.362	8	20 47 43.44	2.2613	23 12 34.3	9.264
9	18 58 53.65	2.3474	27 53 8.2	2.513	9	20 49 59.03	2.2583	23 3 14.5	9.395
10	19 1 14.49	2.3472	27 50 32.9	2.664	10	20 52 14.44	2.2554	22 53 46.9	9.524
11	19 3 35.31	2.3469	27 47 48.5	2.815	11	20 54 29.68	2.2525	22 44 11.6	9.653
12	19 5 56.11	2.3465	27 44 55.1	2.966	12	20 56 44.74	2.2495	22 34 28.6	9.781
13	19 8 16.89	2.3461	27 41 52.6	3.117	13	20 58 59.62	2.2465	22 24 37.9	9.908
14	19 10 37.64	2.3455	27 38 41.1	3.267	14	21 1 14.32	2.2435	22 14 39.6	10.034
15	19 12 58.35	2.3449	27 35 20.6	3.417	15	21 3 28.84	2.2405	22 4 33.8	10.160
16	19 15 19.03	2.3442	27 31 51.1	3.568	16	21 5 43.18	2.2375	21 54 20.4	10.285
17	19 17 39.66	2.3434	27 28 12.5	3.718	17	21 7 57.34	2.2345	21 43 59.6	10.409
18	19 20 0.24	2.3426	27 24 24.9	3.868	18	21 10 11.32	2.2314	21 33 31.3	10.532
19	19 22 20.77	2.3416	27 20 28.3	4.018	19	21 12 25.11	2.2284	21 22 55.7	10.654
20	19 24 41.23	2.3405	27 16 22.8	4.167	20	21 14 38.73	2.2255	21 12 12.8	10.776
21	19 27 1.63	2.3395	27 12 8.3	4.317	21	21 16 52.17	2.2225	21 1 22.6	10.897
22	19 29 21.97	2.3383	27 7 44.8	4.466	22	21 19 5.43	2.2195	20 50 25.2	11.016
23	19 31 42.23	2.3370	S.27 3 12.4	4.614	23	21 21 18.51	2.2164	S.20 39 20.7	11.134
	SATURDAY 14.					**MONDAY 16.**			
0	19 34 2.40	2.3356	S.26 58 31.1	4.762	0	21 23 31.40	2.2134	S.20 28 9.1	11.252
1	19 36 22.49	2.3341	26 53 40.9	4.911	1	21 25 44.12	2.2105	20 16 50.4	11.370
2	19 38 42.49	2.3327	26 48 41.8	5.058	2	21 27 56.66	2.2076	20 5 24.7	11.486
3	19 41 2.41	2.3312	26 43 33.9	5.205	3	21 30 9.03	2.2047	19 53 52.1	11.601
4	19 43 22.23	2.3295	26 38 17.2	5.353	4	21 32 21.22	2.2017	19 42 12.6	11.715
5	19 45 41.94	2.3277	26 32 51.6	5.501	5	21 34 33.23	2.1988	19 30 26.3	11.828
6	19 48 1.55	2.3259	26 27 17.1	5.648	6	21 36 45.07	2.1959	19 18 33.2	11.941
7	19 50 21.05	2.3241	26 21 33.9	5.793	7	21 38 56.74	2.1931	19 6 33.4	12.053
8	19 52 40.44	2.3221	26 15 42.0	5.938	8	21 41 8.24	2.1903	18 54 26.9	12.163
9	19 54 59.71	2.3201	26 9 41.4	6.083	9	21 43 19.57	2.1875	18 42 13.8	12.273
10	19 57 18.86	2.3180	26 3 32.1	6.227	10	21 45 30.73	2.1847	18 29 54.1	12.382
11	19 59 37.88	2.3160	25 57 14.2	6.371	11	21 47 41.73	2.1819	18 17 28.0	12.489
12	20 1 56.79	2.3139	25 50 47.6	6.515	12	21 49 52.56	2.1792	18 4 55.4	12.596
13	20 4 15.56	2.3116	25 44 12.4	6.658	13	21 52 3.23	2.1765	17 52 16.4	12.703
14	20 6 34.19	2.3093	25 37 28.6	6.801	14	21 54 13.74	2.1739	17 39 31.1	12.807
15	20 8 52.68	2.3070	25 30 36.3	6.943	15	21 56 24.10	2.1713	17 26 39.6	12.910
16	20 11 11.03	2.3047	25 23 35.4	7.085	16	21 58 34.30	2.1687	17 13 41.9	13.013
17	20 13 29.24	2.3023	25 16 26.1	7.226	17	22 0 44.35	2.1661	17 0 38.0	13.116
18	20 15 47.31	2.2998	25 9 8.3	7.367	18	22 2 54.24	2.1637	16 47 28.0	13.217
19	20 18 5.22	2.2973	25 1 42.1	7.506	19	22 5 3.99	2.1613	16 34 12.0	13.317
20	20 20 22.98	2.2948	24 54 7.6	7.645	20	22 7 13.59	2.1588	16 20 50.0	13.415
21	20 22 40.59	2.2922	24 46 24.7	7.783	21	22 9 23.04	2.1564	16 7 22.2	13.513
22	20 24 58.04	2.2895	24 38 33.6	7.921	22	22 11 32.35	2.1541	15 53 48.5	13.609
23	20 27 15.33	2.2868	24 30 34.2	8.059	23	22 13 41.53	2.1518	15 40 9.1	13.704
24	20 29 32.46	2.2841	S.24 22 26.5	8.195	24	22 15 50.57	2.1496	S.15 26 24.0	13.799

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 15 50.57	2.1496	S. 15 26 24.0	13.799	0	23 57 38.58	2.1205	S. 2 56 48.5	16.953
1	22 17 59.48	2.1474	15 12 33.2	13.893	1	23 59 45.84	2.1218	2 39 50.3	16.987
2	22 20 8.26	2.1452	14 58 36.9	13.985	2	0 1 53.19	2.1232	2 22 50.1	17.019
3	22 22 16.91	2.1431	14 44 35.0	14.077	3	0 4 0.62	2.1247	2 5 48.0	17.050
4	22 24 25.44	2.1411	14 30 27.6	14.167	4	0 6 8.15	2.1263	1 48 44.1	17.078
5	22 26 33.85	2.1392	14 16 14.9	14.256	5	0 8 15.78	2.1280	1 31 38.6	17.104
6	22 28 42.15	2.1373	14 1 56.9	14.344	6	0 10 23.51	2.1297	1 14 31.6	17.129
7	22 30 50.33	2.1354	13 47 33.6	14.432	7	0 12 31.34	2.1315	0 57 23.1	17.153
8	22 32 58.40	2.1336	13 33 5.1	14.518	8	0 14 39.29	2.1335	0 40 13.2	17.177
9	22 35 6.37	2.1319	13 18 31.5	14.603	9	0 16 47.36	2.1355	0 23 1.9	17.198
10	22 37 14.23	2.1303	13 3 52.8	14.686	10	0 18 55.55	2.1377	S. 0 5 49.4	17.217
11	22 39 22.00	2.1287	12 49 9.2	14.768	11	0 21 3.87	2.1400	N. 0 11 24.1	17.233
12	22 41 29.67	2.1271	12 34 20.7	14.849	12	0 23 12.34	2.1423	0 28 38.5	17.248
13	22 43 37.25	2.1257	12 19 27.3	14.929	13	0 25 20.95	2.1448	0 45 53.8	17.263
14	22 45 44.75	2.1243	12 4 29.1	15.009	14	0 27 29.71	2.1473	1 3 10.0	17.277
15	22 47 52.16	2.1230	11 49 26.2	15.087	15	0 29 38.62	2.1499	1 20 27.0	17.288
16	22 49 59.50	2.1217	11 34 18.6	15.164	16	0 31 47.69	2.1526	1 37 44.6	17.297
17	22 52 6.76	2.1204	11 19 6.5	15.239	17	0 33 56.93	2.1554	1 55 2.6	17.303
18	22 54 13.94	2.1192	11 3 49.9	15.314	18	0 36 6.33	2.1582	2 12 20.9	17.308
19	22 56 21.06	2.1182	10 48 28.8	15.387	19	0 38 15.91	2.1612	2 29 39.5	17.312
20	22 58 28.12	2.1171	10 33 3.4	15.459	20	0 40 25.67	2.1643	2 46 58.3	17.315
21	23 0 35.11	2.1161	10 17 33.7	15.530	21	0 42 35.62	2.1675	3 4 17.3	17.316
22	23 2 42.05	2.1153	10 1 59.8	15.600	22	0 44 45.76	2.1707	3 21 36.3	17.314
23	23 4 48.94	2.1145	S. 9 46 21.7	15.669	23	0 46 56.10	2.1739	N. 3 38 55.0	17.310
WEDNESDAY 18.					FRIDAY 20.				
0	23 6 55.79	2.1138	S. 9 30 39.5	15.737	0	0 49 6.63	2.1772	N. 3 56 13.5	17.306
1	23 9 2.59	2.1131	9 14 53.3	15.803	1	0 51 17.37	2.1808	4 13 31.7	17.299
2	23 11 9.36	2.1125	8 59 3.2	15.867	2	0 53 28.33	2.1845	4 30 49.4	17.290
3	23 13 16.09	2.1120	8 43 9.3	15.930	3	0 55 39.51	2.1882	4 48 6.5	17.280
4	23 15 22.80	2.1116	8 27 11.6	15.992	4	0 57 50.91	2.1920	5 5 23.0	17.268
5	23 17 29.49	2.1112	8 11 10.3	16.053	5	1 0 2.55	2.1959	5 22 38.6	17.253
6	23 19 36.15	2.1109	7 55 5.3	16.113	6	1 2 14.42	2.1998	5 39 53.3	17.237
7	23 21 42.80	2.1108	7 38 56.8	16.171	7	1 4 26.53	2.2039	5 57 7.0	17.219
8	23 23 49.45	2.1107	7 22 44.8	16.228	8	1 6 38.89	2.2081	6 14 19.6	17.199
9	23 25 56.09	2.1106	7 6 29.4	16.284	9	1 8 51.50	2.2123	6 31 30.9	17.177
10	23 28 2.73	2.1107	6 50 10.7	16.338	10	1 11 4.36	2.2166	6 48 40.9	17.153
11	23 30 9.38	2.1108	6 33 48.8	16.391	11	1 13 17.49	2.2210	7 5 49.3	17.127
12	23 32 16.03	2.1110	6 17 23.8	16.443	12	1 15 30.88	2.2255	7 22 56.1	17.099
13	23 34 22.70	2.1113	6 0 55.7	16.493	13	1 17 44.55	2.2301	7 40 1.2	17.070
14	23 36 29.39	2.1117	5 44 24.6	16.542	14	1 19 58.49	2.2347	7 57 4.5	17.038
15	23 38 36.11	2.1122	5 27 50.7	16.589	15	1 22 12.71	2.2395	8 14 5.8	17.004
16	23 40 42.86	2.1128	5 11 13.9	16.636	16	1 24 27.22	2.2444	8 31 5.0	16.968
17	23 42 49.65	2.1134	4 54 34.4	16.681	17	1 26 42.03	2.2493	8 48 2.0	16.931
18	23 44 56.47	2.1141	4 37 52.2	16.724	18	1 28 57.13	2.2542	9 4 56.7	16.891
19	23 47 3.34	2.1149	4 21 7.5	16.766	19	1 31 12.53	2.2593	9 21 48.9	16.848
20	23 49 10.26	2.1158	4 4 20.3	16.807	20	1 33 28.24	2.2645	9 38 38.5	16.805
21	23 51 17.24	2.1168	3 47 30.7	16.846	21	1 35 44.26	2.2697	9 55 25.5	16.759
22	23 53 24.28	2.1179	3 30 38.8	16.883	22	1 38 0.59	2.2750	10 12 9.6	16.710
23	23 55 31.39	2.1192	3 13 44.7	16.919	23	1 40 17.25	2.2804	10 28 50.7	16.660
24	23 57 38.58	2.1205	S. 2 56 48.5	16.953	24	1 42 34.23	2.2858	N. 10 45 28.8	16.608

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 21.					**MONDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 42 34.23	2.2858	N.10 45 28.8	16.608	0	3 39 31.67	2.5947	N.22 20 4.1	11.479
1	1 44 51.54	2.2913	11 2 3.6	16.553	1	3 42 7.54	2.6009	22 31 28.1	11.319
2	1 47 9.18	2.2969	11 18 35.1	16.496	2	3 44 43.78	2.6071	22 42 42.4	11.157
3	1 49 27.16	2.3026	11 35 3.1	16.437	3	3 47 20.40	2.6133	22 53 47.0	10.993
4	1 51 45.48	2.3083	11 51 27.5	16.376	4	3 49 57.38	2.6193	23 4 41.6	10.828
5	1 54 4.15	2.3140	12 7 48.2	16.313	5	3 52 34.71	2.6252	23 15 26.3	10.661
6	1 56 23.16	2.3198	12 24 5.0	16.247	6	3 55 12.40	2.6311	23 26 0.9	10.492
7	1 58 42.52	2.3258	12 40 17.8	16.179	7	3 57 50.44	2.6368	23 36 25.3	10.320
8	2 1 2.25	2.3319	12 56 26.5	16.109	8	4 0 28.82	2.6424	23 46 39.3	10.147
9	2 3 22.34	2.3379	13 12 30.9	16.037	9	4 3 7.53	2.6479	23 56 42.9	9.973
10	2 5 42.79	2.3440	13 28 30.9	15.963	10	4 5 46.57	2.6534	24 6 36.1	9.797
11	2 8 3.61	2.3502	13 44 26.4	15.887	11	4 8 25.93	2.6588	24 16 18.6	9.618
12	2 10 24.82	2.3564	14 0 17.3	15.808	12	4 11 5.62	2.6641	24 25 50.2	9.438
13	2 12 46.39	2.3627	14 16 3.4	15.727	13	4 13 45.62	2.6692	24 35 11.1	9.257
14	2 15 8.34	2.3691	14 31 44.5	15.643	14	4 16 25.92	2.6741	24 44 21.1	9.075
15	2 17 30.68	2.3755	14 47 20.6	15.558	15	4 19 6.51	2.6789	24 53 20.1	8.890
16	2 19 53.40	2.3818	15 2 51.5	15.470	16	4 21 47.39	2.6837	25 2 7.9	8.704
17	2 22 16.50	2.3882	15 18 17.0	15.379	17	4 24 28.55	2.6883	25 10 44.6	8.518
18	2 24 39.99	2.3948	15 33 37.0	15.287	18	4 27 9.98	2.6927	25 19 10.0	8.329
19	2 27 3.88	2.4014	15 48 51.5	15.193	19	4 29 51.67	2.6970	25 27 24.1	8.139
20	2 29 28.16	2.4078	16 4 0.2	15.096	20	4 32 33.62	2.7012	25 35 26.7	7.948
21	2 31 52.83	2.4145	16 19 3.0	14.997	21	4 35 15.81	2.7052	25 43 17.8	7.755
22	2 34 17.90	2.4212	16 33 59.8	14.895	22	4 37 58.24	2.7091	25 50 57.3	7.561
23	2 36 43.38	2.4279	N.16 48 50.4	14.792	23	4 40 40.90	2.7128	N.25 58 25.1	7.367
	SUNDAY 22.					**TUESDAY 24.**			
0	2 39 9.26	2.4346	N.17 3 34.7	14.686	0	4 43 23.77	2.7163	N.26 5 41.3	7.171
1	2 41 35.54	2.4413	17 18 12.6	14.578	1	4 46 6.85	2.7197	26 12 45.6	6.973
2	2 44 2.22	2.4481	17 32 44.0	14.468	2	4 48 50.13	2.7230	26 19 38.0	6.775
3	2 46 29.31	2.4549	17 47 8.7	14.354	3	4 51 33.60	2.7260	26 26 18.6	6.577
4	2 48 56.81	2.4617	18 1 26.5	14.239	4	4 54 17.24	2.7288	26 32 47.2	6.376
5	2 51 24.71	2.4685	18 15 37.4	14.122	5	4 57 1.05	2.7315	26 39 3.7	6.175
6	2 53 53.02	2.4753	18 29 41.3	14.002	6	4 59 45.02	2.7340	26 45 8.2	5.973
7	2 56 21.74	2.4821	18 43 37.8	13.880	7	5 2 29.13	2.7363	26 51 0.5	5.771
8	2 58 50.87	2.4889	18 57 26.9	13.757	8	5 5 13.37	2.7385	26 56 40.7	5.568
9	3 1 20.40	2.4957	19 11 8.6	13.631	9	5 7 57.74	2.7405	27 2 8.7	5.364
10	3 3 50.34	2.5025	19 24 42.6	13.502	10	5 10 42.22	2.7422	27 7 24.4	5.159
11	3 6 20.69	2.5093	19 38 8.8	13.372	11	5 13 26.79	2.7437	27 12 27.8	4.955
12	3 8 51.45	2.5161	19 51 27.2	13.239	12	5 16 11.45	2.7450	27 17 19.0	4.750
13	3 11 22.61	2.5228	20 4 37.5	13.103	13	5 18 56.19	2.7462	27 21 57.8	4.544
14	3 13 54.18	2.5295	20 17 39.6	12.967	14	5 21 40.99	2.7472	27 26 24.2	4.337
15	3 16 26.15	2.5362	20 30 33.5	12.828	15	5 24 25.85	2.7480	27 30 38.2	4.130
16	3 18 58.52	2.5429	20 43 19.0	12.687	16	5 27 10.75	2.7485	27 34 39.8	3.923
17	3 21 31.29	2.5495	20 55 55.9	12.543	17	5 29 55.68	2.7489	27 38 28.9	3.715
18	3 24 4.46	2.5561	21 8 24.1	12.397	18	5 32 40.62	2.7491	27 42 5.6	3.508
19	3 26 38.02	2.5627	21 20 43.5	12.249	19	5 35 25.57	2.7490	27 45 29.8	3.300
20	3 29 11.98	2.5693	21 32 54.0	12.099	20	5 38 10.50	2.7487	27 48 41.6	3.093
21	3 31 46.33	2.5757	21 44 55.4	11.947	21	5 40 55.42	2.7482	27 51 41.0	2.886
22	3 34 21.06	2.5820	21 56 47.7	11.793	22	5 43 40.29	2.7475	27 54 27.9	2.678
23	3 36 56.17	2.5884	22 8 30.6	11.637	23	5 46 25.12	2.7467	27 57 2.3	2.470
24	3 39 31.67	2.5947	N.22 20 4.1	11.479	24	5 49 9.90	2.7457	N.27 59 24.3	2.263

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 49 9.90	2.7457	N.27 59 24.3	2.263
1	5 51 54.61	2.7444	28 1 33.9	2.056
2	5 54 39.23	2.7428	28 3 31.0	1.848
3	5 57 23.75	2.7411	28 5 15.7	1.642
4	6 0 8.17	2.7392	28 6 48.0	1.436
5	6 2 52.46	2.7370	28 8 8.0	1.230
6	6 5 36.62	2.7348	28 9 15.6	1.024
7	6 8 20.64	2.7323	28 10 10.9	0.820
8	6 11 4.50	2.7297	28 10 54.0	0.616
9	6 13 48.20	2.7268	28 11 24.8	0.412
10	6 16 31.72	2.7236	28 11 43.4	0.209
11	6 19 15.05	2.7203	28 11 49.9	+0.007
12	6 21 58.16	2.7168	28 11 44.2	−0.195
13	6 24 41.06	2.7132	28 11 26.5	0.396
14	6 27 23.74	2.7094	28 10 56.7	0.597
15	6 30 6.18	2.7053	28 10 14.9	0.796
16	6 32 48.37	2.7010	28 9 21.2	0.993
17	6 35 30.29	2.6965	28 8 15.7	1.191
18	6 38 11.94	2.6919	28 6 58.3	1.388
19	6 40 53.31	2.6871	28 5 29.2	1.582
20	6 43 34.39	2.6822	28 3 48.5	1.775
21	6 46 15.17	2.6770	28 1 56.2	1.968
22	6 48 55.63	2.6717	27 59 52.4	2.159
23	6 51 35.77	2.6662	N.27 57 37.1	2.350

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 54 15.58	2.6606	N.27 55 10.4	2.539
1	6 56 55.04	2.6548	27 52 32.4	2.727
2	6 59 34.15	2.6488	27 49 43.2	2.913
3	7 2 12.89	2.6426	27 46 42.9	3.098
4	7 4 51.26	2.6363	27 43 31.5	3.281
5	7 7 29.25	2.6300	27 40 9.2	3.463
6	7 10 6.86	2.6236	27 36 35.9	3.645
7	7 12 44.08	2.6169	27 32 51.8	3.824
8	7 15 20.89	2.6101	27 28 57.0	4.002
9	7 17 57.29	2.6032	27 24 51.6	4.178
10	7 20 33.27	2.5962	27 20 35.7	4.353
11	7 23 8.83	2.5890	27 16 9.3	4.527
12	7 25 43.95	2.5817	27 11 32.5	4.698
13	7 28 18.63	2.5743	27 6 45.5	4.868
14	7 30 52.87	2.5669	27 1 48.4	5.036
15	7 33 26.66	2.5593	26 56 41.2	5.203
16	7 35 59.99	2.5516	26 51 24.0	5.368
17	7 38 32.86	2.5439	26 45 57.0	5.532
18	7 41 5.26	2.5360	26 40 20.2	5.693
19	7 43 37.18	2.5281	26 34 33.8	5.853
20	7 46 8.63	2.5202	26 28 37.8	6.012
21	7 48 39.60	2.5121	26 22 32.4	6.168
22	7 51 10.08	2.5039	26 16 17.6	6.323
23	7 53 40.07	2.4957	26 9 53.6	6.476
24	7 56 9.56	2.4874	N.26 3 20.5	6.627

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 56 9.56	2.4874	N.26 3 20.5	6.627
1	7 58 38.55	2.4790	25 56 38.4	6.776
2	8 1 7.04	2.4706	25 49 47.4	6.924
3	8 3 35.02	2.4621	25 42 47.5	7.071
4	8 6 2.49	2.4536	25 35 38.9	7.214
5	8 8 29.45	2.4451	25 28 21.8	7.356
6	8 10 55.90	2.4365	25 20 56.2	7.497
7	8 13 21.83	2.4279	25 13 22.2	7.635
8	8 15 47.25	2.4193	25 5 40.0	7.772
9	8 18 12.15	2.4107	24 57 49.6	7.908
10	8 20 36.53	2.4020	24 49 51.1	8.041
11	8 23 0.38	2.3932	24 41 44.7	8.172
12	8 25 23.71	2.3845	24 33 30.5	8.301
13	8 27 46.51	2.3757	24 25 8.6	8.429
14	8 30 8.79	2.3670	24 16 39.0	8.556
15	8 32 30.55	2.3582	24 8 1.9	8.680
16	8 34 51.78	2.3495	23 59 17.4	8.803
17	8 37 12.49	2.3407	23 50 25.6	8.923
18	8 39 32.67	2.3319	23 41 26.7	9.042
19	8 41 52.32	2.3232	23 32 20.6	9.159
20	8 44 11.45	2.3145	23 23 7.6	9.274
21	8 46 30.06	2.3058	23 13 47.7	9.388
22	8 48 48.15	2.2971	23 4 21.0	9.501
23	8 51 5.71	2.2884	N.22 54 47.6	9.611

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 53 22.75	2.2797	N.22 45 7.7	9.719
1	8 55 39.27	2.2710	22 35 21.3	9.826
2	8 57 55.27	2.2624	22 25 28.6	9.931
3	9 0 10.76	2.2538	22 15 29.6	10.034
4	9 2 25.73	2.2452	22 5 24.5	10.136
5	9 4 40.19	2.2367	21 55 13.3	10.237
6	9 6 54.14	2.2282	21 44 56.1	10.335
7	9 9 7.58	2.2198	21 34 33.1	10.431
8	9 11 20.52	2.2115	21 24 4.4	10.527
9	9 13 32.96	2.2032	21 13 29.9	10.621
10	9 15 44.90	2.1949	21 2 49.9	10.712
11	9 17 56.34	2.1867	20 52 4.5	10.802
12	9 20 7.29	2.1785	20 41 13.7	10.891
13	9 22 17.75	2.1703	20 30 17.6	10.978
14	9 24 27.72	2.1622	20 19 16.3	11.063
15	9 26 37.21	2.1542	20 8 10.0	11.147
16	9 28 46.22	2.1462	19 56 58.7	11.229
17	9 30 54.75	2.1382	19 45 42.5	11.311
18	9 33 2.80	2.1303	19 34 21.4	11.391
19	9 35 10.38	2.1225	19 22 55.6	11.468
20	9 37 17.50	2.1148	19 11 25.2	11.545
21	9 39 24.16	2.1072	18 59 50.2	11.621
22	9 41 30.36	2.0996	18 48 10.7	11.695
23	9 43 36.11	2.0920	18 36 26.8	11.767
24	9 45 41.40	2.0845	N.18 24 38.7	11.838

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 29.					MONDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 45 41.40	2.0845	N.18 24 38.7	11.838	0	10 33 44.72	1.9278	N.13 23 20.0	13.154
1	9 47 46.25	2.0771	18 12 46.3	11.908	1	10 35 40.22	1.9223	13 10 9.5	13.194
2	9 49 50.65	2.0697	18 0 49.8	11.975	2	10 37 35.39	1.9169	12 56 56.7	13.234
3	9 51 54.61	2.0625	17 48 49.3	12.042	3	10 39 30.24	1.9116	12 43 41.5	13.272
4	9 53 58.14	2.0553	17 36 44.8	12.107	4	10 41 24.77	1.9063	12 30 24.0	13.309
5	9 56 1.24	2.0482	17 24 36.5	12.171	5	10 43 18.99	1.9011	12 17 4.4	13.345
6	9 58 3.92	2.0411	17 12 24.3	12.234	6	10 45 12.89	1.8959	12 3 42.6	13.380
7	10 0 6.17	2.0341	17 0 8.4	12.296	7	10 47 6.49	1.8909	11 50 18.8	13.414
8	10 2 8.01	2.0273	16 47 48.8	12.357	8	10 48 59.80	1.8860	11 36 52.9	13.448
9	10 4 9.44	2.0205	16 35 25.6	12.415	9	10 50 52.81	1.8812	11 23 25.0	13.481
10	10 6 10.46	2.0137	16 22 59.0	12.472	10	10 52 45.54	1.8765	11 9 55.2	13.512
11	10 8 11.08	2.0070	16 10 29.0	12.528	11	10 54 37.99	1.8719	10 56 23.6	13.543
12	10 10 11.30	2.0004	15 57 55.6	12.583	12	10 56 30.16	1.8673	10 42 50.1	13.573
13	10 12 11.13	1.9939	15 45 19.0	12.637	13	10 58 22.06	1.8628	10 29 14.9	13.600
14	10 14 10.57	1.9875	15 32 39.2	12.691	14	11 0 13.69	1.8584	10 15 38.1	13.627
15	10 16 9.63	1.9812	15 19 56.1	12.743	15	11 2 5.06	1.8541	10 1 59.6	13.655
16	10 18 8.31	1.9750	15 7 10.0	12.793	16	11 3 56.17	1.8498	9 48 19.5	13.681
17	10 20 6.62	1.9688	14 54 21.0	12.841	17	11 5 47.03	1.8457	9 34 37.9	13.706
18	10 22 4.55	1.9626	14 41 29.1	12.889	18	11 7 37.65	1.8417	9 20 54.8	13.730
19	10 24 2.12	1.9566	14 28 34.3	12.937	19	11 9 28.03	1.8377	9 7 10.3	13.753
20	10 25 59.34	1.9507	14 15 36.8	12.982	20	11 11 18.17	1.8338	8 53 24.4	13.776
21	10 27 56.20	1.9449	14 2 36.5	13.027	21	11 13 8.08	1.8300	8 39 37.2	13.798
22	10 29 52.72	1.9391	13 49 33.5	13.071	22	11 14 57.76	1.8262	8 25 48.7	13.818
23	10 31 48.89	1.9334	13 36 28.0	13.113	23	11 16 47.22	1.8226	8 11 59.0	13.838
24	10 33 44.72	1.9278	N.13 23 20.0	13.154	24	11 18 36.47	1.8191	N. 7 58 8.2	13.857

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	8	17	33.8
☽ First Quarter,.	16	13	53.7
○ Full Moon, ...	23	5	34.1
☾ Last Quarter, ...	30	6	29.2

	d	h
☾ Apogee, ...	7	3.1
☾ Perigee, ...	22	6.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Arietis	W.	96° 53′ 35″	2831	98° 27′ 23″	2845	100° 0′ 52″	2860	101° 34′ 2″	2875
	Aldebaran	W.	66 32 27	2838	68 6 5	2851	69 39 27	2863	71 12 33	2876
	Pollux	W.	22 17 30	2783	23 52 20	2797	25 26 52	2810	27 1 7	2824
	Sun	E.	85 5 54	3133	83 38 24	3148	82 11 12	3163	80 44 19	3178
2	Aldebaran	W.	78 54 4	2935	80 25 38	2946	81 56 58	2957	83 28 5	2967
	Pollux	W.	34 48 13	2884	36 20 52	2895	37 53 17	2906	39 25 28	2916
	Sun	E.	73 34 12	3247	72 8 59	3259	70 44 0	3272	69 19 16	3283
3	Aldebaran	W.	91 0 32	3014	92 30 27	3023	94 0 11	3031	95 29 45	3039
	Pollux	W.	47 3 13	2964	48 34 11	2972	50 4 59	2980	51 35 37	2988
	Sun	E.	62 18 51	3337	60 55 22	3345	59 32 3	3354	58 8 54	3363
4	Aldebaran	W.	102 55 13	3075	104 23 53	3082	105 52 25	3087	107 20 50	3094
	Pollux	W.	59 6 31	3020	60 36 19	3026	62 6 0	3031	63 35 34	3036
	Regulus	W.	22 47 29	3087	24 15 54	3085	25 44 22	3084	27 12 51	3084
	Sun	E.	51 15 29	3400	49 53 13	3407	48 31 4	3412	47 9 1	3418
5	Pollux	W.	71 2 2	3056	72 31 6	3059	74 0 6	3062	75 29 2	3065
	Regulus	W.	34 35 10	3087	36 3 35	3087	37 32 0	3088	39 0 24	3089
	Sun	E.	40 20 16	3441	38 58 46	3445	37 37 20	3448	36 15 58	3451
6	Pollux	W.	82 53 5	3073	84 21 48	3073	85 50 30	3074	87 19 11	3074
	Regulus	W.	46 22 11	3091	47 50 31	3091	49 18 51	3091	50 47 11	3091
	Sun	E.	29 29 55	3463	28 8 50	3466	26 47 48	3468	25 26 48	3470
11	Sun	W.	25 7 54	3360	26 30 56	3353	27 54 6	3346	29 17 24	3338
	Saturn	E.	54 38 0	3009	53 7 58	3004	51 37 50	2999	50 7 36	2994
	α Aquilæ	E.	55 17 24	4401	54 12 4	4453	53 7 30	4508	52 3 45	4570
	Fomalhaut	E.	77 41 9	3173	76 14 28	3171	74 47 44	3168	73 20 56	3165
	α Pegasi	E.	98 44 51	3319	97 21 2	3311	95 57 3	3303	94 32 55	3296
12	Sun	W.	36 16 4	3300	37 40 15	3293	39 4 35	3284	40 29 5	3276
	Saturn	E.	42 34 49	2967	41 3 55	2962	39 32 55	2957	38 1 48	2951
	α Aquilæ	E.	46 59 45	4971	46 2 27	5076	45 6 31	5193	44 12 4	5321
	Fomalhaut	E.	66 6 14	3155	64 39 11	3153	63 12 6	3153	61 45 0	3153
	α Pegasi	E.	87 30 13	3262	86 5 17	3257	84 40 15	3251	83 15 6	3246
13	Sun	W.	47 34 7	3231	48 59 40	3220	50 25 25	3210	51 51 22	3200
	Venus	W.	14 10 32	2927	15 42 17	2916	17 14 15	2905	18 46 27	2894
	Saturn	E.	30 24 33	2927	28 52 48	2923	27 20 58	2920	25 49 4	2917
	Fomalhaut	E.	54 29 38	3159	53 2 40	3163	51 35 47	3168	50 8 59	3173
	α Pegasi	E.	76 7 53	3223	74 42 11	3220	73 16 25	3217	71 50 36	3214
14	Sun	W.	59 4 15	3145	60 31 30	3133	61 58 59	3121	63 26 43	3109
	Venus	W.	26 31 7	2835	28 4 49	2822	29 38 48	2810	31 13 3	2796
	Fomalhaut	E.	42 57 20	3228	41 31 44	3246	40 6 29	3267	38 41 39	3293
	α Pegasi	E.	64 40 54	3209	63 14 56	3210	61 48 59	3213	60 23 5	3215
	α Arietis	E.	105 38 23	2840	104 4 47	2828	102 30 56	2817	100 56 50	2805
15	Sun	W.	70 49 14	3043	72 18 33	3030	73 48 9	3015	75 18 3	3001
	Venus	W.	39 8 45	2728	40 44 48	2713	42 21 11	2698	43 57 54	2683
	α Pegasi	E.	53 15 0	3253	51 49 53	3266	50 25 2	3281	49 0 28	3299
	α Arietis	E.	93 2 19	2742	91 26 35	2729	89 50 34	2716	88 14 16	2703

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Arietis	W.	103° 6′ 53″	2889	104° 39′ 26″	2902	106° 11′ 42″	2916	107° 43′ 41″	2929
	Aldebaran	W.	72 45 22	2889	74 17 55	2901	75 50 13	2912	77 22 16	2924
	Pollux	W.	28 35 4	2836	30 8 45	2848	31 42 10	2861	33 15 19	2873
	Sun	E.	79 17 44	3193	77 51 26	3207	76 25 25	3221	74 59 41	3234
2	Aldebaran	W.	84 58 59	2977	86 29 40	2987	88 0 9	2997	89 30 26	3005
	Pollux	W.	40 57 26	2927	42 29 11	2937	44 0 43	2946	45 32 4	2955
	Sun	E.	67 54 45	3295	66 30 28	3306	65 6 23	3317	63 42 31	3327
3	Aldebaran	W.	96 59 9	3047	98 28 24	3055	99 57 29	3062	101 26 25	3069
	Pollux	W.	53 6 5	2995	54 36 24	3002	56 6 34	3009	57 36 36	3014
	Sun	E.	56 45 55	3371	55 23 5	3379	54 0 25	3386	52 37 53	3393
4	Aldebaran	W.	108 49 7	3099	110 17 18	3105	111 45 22	3110	113 13 20	3115
	Pollux	W.	65 5 2	3040	66 34 25	3045	68 3 42	3049	69 32 54	3052
	Regulus	W.	28 41 20	3084	30 9 49	3085	31 38 17	3086	33 6 44	3087
	Sun	E.	45 47 5	3423	44 25 15	3428	43 3 30	3433	41 41 51	3437
5	Pollux	W.	76 57 55	3066	78 26 46	3069	79 55 34	3070	81 24 20	3071
	Regulus	W.	40 28 47	3090	41 57 9	3091	43 25 30	3091	44 53 51	3091
	Sun	E.	34 54 39	3454	33 33 23	3457	32 12 11	3460	30 51 2	3462
6	Pollux	W.	88 47 52	3075	90 16 32	3075	91 45 12	3075	93 13 52	3075
	Regulus	W.	52 15 31	3091	53 43 52	3091	55 12 13	3090	56 40 35	3088
	Sun	E.	24 5 50	3471	22 44 53	3473	21 23 59	3475	20 3 7	3477
11	Sun	W.	30 40 51	3332	32 4 26	3324	33 28 10	3316	34 52 3	3309
	Saturn	E.	48 37 16	2989	47 6 49	2984	45 36 16	2978	44 5 36	2973
	α Aquilæ	E.	51 0 54	4636	49 59 0	4708	48 58 7	4787	47 58 20	4875
	Fomalhaut	E.	71 54 5	3163	70 27 11	3160	69 0 14	3158	67 33 15	3157
	α Pegasi	E.	93 8 39	3289	91 44 15	3282	90 19 42	3275	88 55 1	3269
12	Sun	W.	41 53 44	3267	43 18 34	3259	44 43 34	3249	46 8 45	3240
	Saturn	E.	36 30 34	2946	34 59 14	2941	33 27 47	2935	31 56 13	2931
	α Aquilæ	E.	43 19 12	5463	42 28 2	5621	41 38 42	5796	40 51 19	5995
	Fomalhaut	E.	60 17 54	3153	58 50 48	3153	57 23 43	3154	55 56 39	3157
	α Pegasi	E.	81 49 51	3241	80 24 30	3236	78 59 3	3231	77 33 31	3226
13	Sun	W.	53 17 31	3189	54 43 53	3179	56 10 27	3168	57 37 14	3157
	Venus	W.	20 18 53	2883	21 51 34	2871	23 24 30	2859	24 57 41	2848
	Saturn	E.	24 17 7	2916	22 45 9	2917	21 13 12	2920	19 41 18	2925
	Fomalhaut	E.	48 42 18	3181	47 15 46	3189	45 49 24	3199	44 23 14	3213
	α Pegasi	E.	70 24 43	3212	68 58 48	3210	67 32 51	3209	66 6 53	3209
14	Sun	W.	64 54 42	3096	66 22 56	3083	67 51 26	3070	69 20 12	3057
	Venus	W.	32 47 36	2783	34 22 26	2769	35 57 34	2756	37 33 0	2741
	Fomalhaut	E.	37 17 19	3322	35 53 33	3358	34 30 28	3400	33 8 11	3448
	α Pegasi	E.	58 57 14	3220	57 31 29	3225	56 5 50	3233	54 40 20	3242
	α Arietis	E.	99 22 28	2792	97 47 50	2780	96 12 56	2768	94 37 46	2755
15	Sun	W.	76 48 15	2986	78 18 45	2972	79 49 33	2957	81 20 40	2941
	Venus	W.	45 34 57	2668	47 12 20	2652	48 50 4	2636	50 28 10	2620
	α Pegasi	E.	47 36 15	3319	46 12 26	3345	44 49 7	3374	43 26 21	3409
	α Arietis	E.	86 37 40	2689	85 0 46	2676	83 23 34	2663	81 46 4	2649

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16	Sun	W.	82° 52′ 7″	2925	84° 23′ 54″	2910	85° 56′ 0″	2894	87° 28′ 26″	2878
	Venus	W.	52 6 38	2604	53 45 27	2588	55 24 38	2572	57 4 12	2556
	α Pegasi	E.	42 4 15	3449	40 42 54	3495	39 22 24	3549	38 2 54	3613
	α Arietis	E.	80 8 16	2635	78 30 9	2621	76 51 43	2607	75 12 58	2593
	Aldebaran	E.	110 30 55	2639	108 52 53	2624	107 14 30	2607	105 35 45	2591
17	Sun	W.	95 15 51	2796	96 50 24	2779	98 25 19	2763	100 0 36	2745
	Venus	W.	65 27 47	2471	67 9 41	2453	68 52 0	2436	70 34 43	2419
	α Aquilæ	W.	44 27 47	4698	45 28 48	4550	46 31 56	4414	47 37 5	4289
	Saturn	W.	21 47 14	2558	23 27 7	2532	25 7 36	2508	26 48 38	2485
	α Arietis	E.	66 54 25	2524	65 13 45	2510	63 32 46	2496	61 51 27	2482
	Aldebaran	E.	97 16 33	2512	95 35 37	2496	93 54 18	2480	92 12 37	2464
18	Sun	W.	108 2 39	2661	109 40 11	2645	111 18 5	2628	112 56 22	2612
	Venus	W.	79 14 33	2332	80 59 46	2315	82 45 24	2297	84 31 28	2281
	α Aquilæ	W.	53 29 27	3792	54 44 37	3714	56 1 9	3640	57 19 0	3572
	Saturn	W.	35 21 22	2384	37 5 19	2366	38 49 42	2348	40 34 31	2331
	α Arietis	E.	53 20 14	2419	51 37 7	2408	49 53 44	2398	48 10 6	2387
	Aldebaran	E.	83 38 36	2386	81 54 41	2371	80 10 25	2356	78 25 47	2341
19	Sun	W.	121 13 18	2533	122 53 46	2517	124 34 35	2503	126 15 44	2489
	Venus	W.	93 27 55	2198	95 16 25	2182	97 5 19	2167	98 54 36	2152
	α Aquilæ	W.	64 5 28	3294	65 29 47	3248	66 54 59	3205	68 21 2	3166
	Saturn	W.	49 24 46	2249	51 12 0	2234	52 59 37	2219	54 47 36	2204
	Fomalhaut	W.	31 35 31	2964	33 6 29	2881	34 39 12	2808	36 13 30	2742
	α Arietis	E.	39 28 46	2353	37 44 4	2351	35 59 19	2352	34 14 35	2355
	Aldebaran	E.	69 37 23	2272	67 50 43	2259	66 3 43	2247	64 16 25	2235
	Pollux	E.	113 19 38	2212	111 31 29	2198	109 42 58	2184	107 54 7	2170
20	Venus	W.	108 6 35	2082	109 58 2	2070	111 49 48	2057	113 41 53	2046
	α Aquilæ	W.	75 42 4	3008	77 12 7	2983	78 42 41	2961	80 13 43	2942
	Saturn	W.	63 52 44	2139	65 42 44	2128	67 33 1	2116	69 23 35	2106
	Fomalhaut	W.	44 24 5	2502	46 5 15	2467	47 47 15	2435	49 30 0	2406
	α Pegasi	W.	29 13 41	4011	30 25 10	3793	31 40 19	3610	32 58 42	3453
	Aldebaran	E.	55 15 55	2187	53 27 8	2180	51 38 10	2173	49 49 2	2168
	Pollux	E.	98 44 51	2108	96 54 4	2096	95 2 59	2085	93 11 37	2075
21	α Aquilæ	W.	87 54 17	2873	89 27 11	2866	91 0 14	2860	92 33 24	2858
	Saturn	W.	78 40 10	2062	80 32 8	2055	82 24 16	2049	84 16 34	2044
	Fomalhaut	W.	58 13 2	2295	59 59 9	2278	61 45 41	2264	63 32 34	2250
	α Pegasi	W.	40 8 35	2922	41 40 26	2851	43 13 48	2788	44 48 31	2735
	Aldebaran	E.	40 42 4	2163	38 52 40	2168	37 3 24	2174	35 14 18	2184
	Pollux	E.	83 51 10	2033	81 58 27	2026	80 5 34	2020	78 12 31	2015
22	α Aquilæ	W.	100 19 10	2877	101 51 58	2889	103 24 31	2903	104 56 46	2919
	Saturn	W.	93 39 46	2028	95 32 36	2027	97 25 28	2026	99 18 21	2027
	Fomalhaut	W.	72 31 11	2206	74 19 30	2201	76 7 56	2197	77 56 28	2195
	α Pegasi	W.	52 57 48	2540	54 38 5	2515	56 18 58	2492	58 0 23	2472
	Pollux	E.	68 45 34	1999	66 51 58	1998	64 58 21	1998	63 4 43	1998
	Regulus	E.	105 21 51	2008	103 28 29	2007	101 35 6	2007	99 41 42	2007
23	Fomalhaut	W.	86 59 20	2202	88 47 45	2206	90 36 3	2212	92 24 12	2220
	α Pegasi	W	66 33 8	2412	68 16 26	2407	69 59 51	2403	71 43 21	2402
	α Arietis	W.	22 55 10	2370	24 39 28	2327	26 24 48	2294	28 10 57	2268
	Pollux	E.	53 37 11	2012	51 43 56	2018	49 50 50	2024	47 57 53	2030

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16	Sun	W.	89° 1′ 13″	2862	90° 34′ 21″	2845	92° 7′ 50″	2829	93° 41′ 40″	2813
	Venus	W.	58 44 8	2539	60 24 27	2522	62 5 10	2504	63 46 17	2488
	α Pegasi	E.	36 44 34	3687	35 27 33	3774	34 12 4	3675	32 58 19	3991
	α Arietis	E.	73 33 54	2580	71 54 31	2565	70 14 48	2551	68 34 46	2538
	Aldebaran	E.	103 56 38	2575	102 17 9	2560	100 37 19	2544	98 57 7	2528
17	Sun	W.	101 36 16	2729	103 12 18	2711	104 48 43	2695	106 25 30	2678
	Venus	W.	72 17 51	2401	74 1 24	2384	75 45 22	2366	77 29 45	2349
	α Aquilæ	W.	48 44 8	4174	49 52 59	4067	51 3 33	3968	52 15 44	3877
	Saturn	W.	28 30 12	2464	30 12 16	2443	31 54 50	2423	33 37 52	2403
	α Arietis	E.	60 9 49	2469	58 27 52	2456	56 45 37	2443	55 3 4	2431
	Aldebaran	E.	90 30 33	2448	88 48 7	2433	87 5 19	2417	85 22 9	2401
18	Sun	W.	114 35 1	2595	116 14 3	2580	117 53 26	2564	119 33 11	2548
	Venus	W.	86 17 56	2264	88 4 49	2247	89 52 7	2231	91 39 49	2214
	α Aquilæ	W.	58 38 5	3508	59 58 20	3449	61 19 41	3393	62 42 5	3342
	Saturn	W.	42 19 45	2314	44 5 24	2298	45 51 27	2281	47 37 55	2265
	α Arietis	E.	46 26 13	2378	44 42 7	2371	42 57 50	2363	41 13 22	2357
	Aldebaran	E.	76 40 47	2326	74 55 26	2313	73 9 45	2299	71 23 44	2285
19	Sun	W.	127 57 13	2475	129 39 1	2462	131 21 7	2449	133 3 32	2436
	Venus	W.	100 44 16	2137	102 34 18	2123	104 24 42	2109	106 15 28	2095
	α Aquilæ	W.	69 47 52	3129	71 15 26	3096	72 43 41	3064	74 12 35	3035
	Saturn	W.	56 35 57	2190	58 24 39	2177	60 13 41	2164	62 3 3	2151
	Fomalhaut	W.	37 49 14	2684	39 26 16	2630	41 4 30	2583	42 43 48	2540
	α Arietis	E.	32 29 56	2362	30 45 27	2372	29 1 12	2387	27 17 18	2406
	Aldebaran	E.	62 28 50	2225	60 40 59	2214	58 52 52	2204	57 4 30	2195
	Pollux	E.	106 4 55	2157	104 15 23	2144	102 25 31	2132	100 35 20	2120
20	Venus	W.	115 34 15	2035	117 26 55	2025	119 19 51	2014	121 13 3	2004
	α Aquilæ	W.	81 45 9	2924	83 16 58	2907	84 49 8	2894	86 21 35	2882
	Saturn	W.	71 14 25	2096	73 5 31	2086	74 56 51	2078	76 48 24	2070
	Fomalhaut	W.	51 13 26	2380	52 57 30	2355	54 42 10	2333	56 27 22	2313
	α Pegasi	W.	34 19 59	3316	35 43 52	3196	37 10 6	3092	38 38 25	3002
	Aldebaran	E.	47 59 46	2165	46 10 25	2162	44 21 0	2160	42 31 32	2160
	Pollux	E.	91 20 0	2066	89 28 8	2057	87 36 2	2048	85 43 42	2040
21	α Aquilæ	W.	94 6 37	2857	95 39 51	2858	97 13 4	2862	98 46 11	2869
	Saturn	W.	86 9 0	2039	88 1 33	2035	89 54 13	2032	91 46 58	2030
	Fomalhaut	W.	65 19 47	2239	67 7 17	2228	68 55 3	2220	70 43 1	2212
	α Pegasi	W.	46 24 25	2686	48 1 24	2642	49 39 22	2604	51 18 12	2570
	Aldebaran	E.	33 25 27	2198	31 36 56	2215	29 48 51	2237	28 1 19	2266
	Pollux	E.	76 19 20	2010	74 26 2	2006	72 32 37	2003	70 39 7	2001
22	α Aquilæ	W.	106 28 41	2939	108 0 11	2962	109 31 12	2987	111 1 41	3017
	Saturn	W.	101 11 13	2029	103 4 2	2031	104 56 48	2034	106 49 29	2038
	Fomalhaut	W.	79 45 3	2194	81 33 39	2194	83 22 15	2196	85 10 49	2198
	α Pegasi	W.	59 42 15	2455	61 24 31	2441	63 7 8	2429	64 50 1	2419
	Pollux	E.	61 11 6	2000	59 17 31	2002	57 24 0	2005	55 30 33	2008
	Regulus	E.	97 48 19	2009	95 54 58	2010	94 1 39	2013	92 8 25	2016
23	Fomalhaut	W.	94 12 10	2228	95 59 56	2237	97 47 28	2247	99 34 45	2259
	α Pegasi	W.	73 26 53	2402	75 10 25	2403	76 53 55	2406	78 37 21	2411
	α Arietis	W.	29 57 43	2249	31 44 57	2236	33 32 31	2227	35 20 19	2220
	Pollux	E.	46 5 6	2038	44 12 31	2046	42 20 9	2055	40 28 1	2064

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23	Regulus	E.	90° 15′ 16″	2021	88° 22′ 14″	2026	86° 29′ 20″	2032	84° 36′ 35″	2039
24	Fomalhaut	W.	101 21 45	2272	103 8 26	2286	104 54 46	2300	106 40 45	2317
	α Pegasi	W.	80 20 40	2417	82 3 50	2424	83 46 50	2433	85 29 37	2444
	α Arietis	W.	37 8 16	2217	38 56 18	2217	40 44 20	2219	42 32 19	2223
	Pollux	E.	38 36 7	2075	36 44 29	2086	34 53 8	2098	33 2 6	2111
	Regulus	E.	75 15 48	2083	73 24 22	2093	71 33 12	2105	69 42 20	2117
25	α Pegasi	W.	93 59 20	2513	95 40 15	2530	97 20 46	2549	99 0 51	2568
	α Arietis	W.	51 30 16	2260	53 17 14	2272	55 3 55	2284	56 50 18	2296
	Aldebaran	W.	21 57 22	2553	23 37 22	2517	25 18 11	2492	26 59 36	2475
	Regulus	E.	60 32 59	2187	58 44 12	2202	56 55 48	2219	55 7 49	2236
	Mars	E.	105 59 47	2359	104 15 14	2375	102 31 4	2391	100 47 17	2408
	Spica	E.	114 34 5	2177	112 45 3	2193	110 56 25	2209	109 8 11	2225
	Jupiter	E.	114 55 33	2231	113 7 51	2245	111 20 31	2262	109 33 35	2277
26	α Arietis	W.	65 37 13	2371	67 21 29	2387	69 5 22	2404	70 48 51	2421
	Aldebaran	W.	35 30 15	2460	37 12 24	2466	38 54 25	2474	40 36 15	2484
	Regulus	E.	46 14 19	2326	44 28 58	2346	42 44 5	2366	40 59 41	2385
	Mars	E.	92 14 31	2498	90 33 15	2517	88 52 25	2535	87 12 1	2555
	Spica	E.	100 13 5	2310	98 27 20	2328	96 42 1	2346	94 57 9	2364
	Jupiter	E.	100 45 1	2364	99 0 35	2382	97 16 35	2401	95 33 2	2419
	Sun	E.	141 49 12	2644	140 11 17	2663	138 33 47	2682	136 56 43	2701
27	α Arietis	W.	79 20 4	2511	81 1 2	2529	82 41 35	2548	84 21 42	2566
	Aldebaran	W.	49 1 33	2546	50 41 42	2561	52 21 30	2576	54 0 58	2592
	Regulus	E.	32 25 1	2493	30 43 38	2515	29 2 46	2539	27 22 27	2564
	Mars	E.	78 56 46	2654	77 19 4	2673	75 41 48	2693	74 4 59	2713
	Spica	E.	86 19 29	2459	84 37 18	2478	82 55 34	2497	81 14 16	2516
	Jupiter	E.	87 1 57	2515	85 21 5	2534	83 40 39	2553	82 0 40	2572
	Sun	E.	128 57 50	2800	127 23 22	2821	125 49 21	2841	124 15 46	2861
28	α Arietis	W.	92 35 51	2660	94 13 24	2679	95 50 32	2697	97 27 16	2716
	Aldebaran	W.	62 12 51	2673	63 50 7	2689	65 27 1	2706	67 3 33	2722
	Pollux	W.	17 56 26	2621	19 34 53	2637	21 12 58	2653	22 50 41	2670
	Mars	E.	66 7 29	2811	64 33 16	2831	62 59 28	2850	61 26 5	2869
	Spica	E.	72 54 22	2610	71 15 40	2629	69 37 24	2647	67 59 33	2665
	Jupiter	E.	73 47 17	2668	72 9 54	2687	70 32 56	2704	68 56 22	2722
	Sun	E.	116 34 20	2962	115 3 20	2981	113 32 44	3001	112 2 33	3020
29	α Arietis	W.	105 24 53	2805	106 59 14	2822	108 33 13	2839	110 6 50	2856
	Aldebaran	W.	75 0 49	2803	76 35 13	2818	78 9 17	2834	79 43 1	2848
	Pollux	W.	30 53 42	2752	32 29 13	2768	34 4 23	2783	35 39 13	2798
	Mars	E.	53 45 4	2959	52 14 0	2976	50 43 17	2993	49 12 55	3009
	Spica	E.	59 56 13	2751	58 20 41	2768	56 45 31	2784	55 10 42	2800
	Jupiter	E.	60 59 27	2810	59 25 12	2826	57 51 18	2842	56 17 45	2859
	Sun	E.	104 37 28	3114	103 9 35	3132	101 42 4	3148	100 14 53	3166
30	Aldebaran	W.	87 26 56	2921	88 58 48	2934	90 30 24	2946	92 1 44	2959
	Pollux	W.	43 28 31	2870	45 1 28	2883	46 34 8	2897	48 6 31	2909
	Mars	E.	41 46 3	3086	40 17 36	3101	38 49 27	3114	37 21 35	3127
	Spica	E.	47 21 40	2874	45 48 48	2888	44 16 14	2901	42 43 57	2915
	Jupiter	E.	48 34 59	2933	47 3 22	2946	45 32 2	2959	44 0 58	2972
	Sun	E.	93 3 58	3246	91 38 43	3260	90 13 45	3274	88 49 3	3288

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23	Regulus	E.	82° 44′ 1″	2046	80° 51′ 38″	2053	78° 59′ 27″	2062	77° 7′ 30″	2072
24	Fomalhaut	W.	108 26 20	2334	110 11 30	2352	111 56 14	2372	113 40 29	2392
	α Pegasi	W.	87 12 9	2455	88 54 25	2468	90 36 23	2482	92 18 2	2497
	α Arietis	W.	44 20 13	2227	46 8 0	2233	47 55 38	2241	49 43 4	2251
	Pollux	E.	31 11 23	2124	29 21 0	2137	27 30 58	2152	25 41 18	2167
	Regulus	E.	67 51 47	2130	66 1 34	2143	64 11 41	2157	62 22 9	2172
25	α Pegasi	W.	100 40 30	2589	102 19 40	2610	103 58 21	2633	105 36 31	2657
	α Arietis	W.	58 36 23	2310	60 22 8	2324	62 7 32	2339	63 52 34	2355
	Aldebaran	W.	28 41 25	2463	30 23 30	2457	32 5 44	2455	33 48 0	2456
	Regulus	E.	53 20 15	2253	51 33 7	2270	49 46 24	2289	48 0 8	2307
	Mars	E.	99 3 54	2425	97 20 55	2443	95 38 21	2461	93 56 13	2480
	Spica	E.	107 20 21	2241	105 32 55	2258	103 45 53	2274	101 59 16	2292
	Jupiter	E.	107 47 2	2294	106 0 54	2311	104 15 11	2328	102 29 53	2346
26	α Arietis	W.	72 31 56	2438	74 14 36	2456	75 56 51	2475	77 38 40	2492
	Aldebaran	W.	42 17 51	2494	43 59 12	2506	45 40 17	2519	47 21 4	2532
	Regulus	E.	39 15 45	2405	37 32 18	2427	35 49 22	2448	34 6 56	2470
	Mars	E.	85 32 4	2574	83 52 34	2594	82 13 31	2614	80 34 55	2634
	Spica	E.	93 12 43	2383	91 28 44	2402	89 45 12	2421	88 2 7	2440
	Jupiter	E.	93 49 55	2438	92 7 15	2458	90 25 2	2477	88 43 16	2496
	Sun	E.	135 20 5	2720	133 43 52	2740	132 8 5	2760	130 32 44	2780
27	α Arietis	W.	86 1 23	2585	87 40 38	2604	89 19 28	2623	90 57 52	2641
	Aldebaran	W.	55 40 4	2607	57 18 49	2624	58 57 12	2640	60 35 13	2657
	Regulus	E.	25 42 42	2589	24 3 32	2617	22 25 0	2646	20 47 7	2675
	Mars	E.	72 28 37	2733	70 52 41	2753	69 17 11	2772	67 42 7	2792
	Spica	E.	79 33 25	2535	77 53 0	2554	76 13 2	2572	74 33 29	2591
	Jupiter	E.	80 21 7	2591	78 42 0	2611	77 3 20	2630	75 25 6	2649
	Sun	E.	122 42 37	2881	121 9 54	2901	119 37 37	2922	118 5 46	2942
28	α Arietis	W.	99 3 35	2734	100 39 30	2752	102 15 1	2769	103 50 9	2788
	Aldebaran	W.	68 39 43	2739	70 15 31	2755	71 50 58	2771	73 26 4	2787
	Pollux	W.	24 28 1	2687	26 4 59	2703	27 41 35	2719	29 17 49	2735
	Mars	E.	59 53 6	2887	58 20 31	2905	56 48 19	2924	55 16 30	2942
	Spica	E.	66 22 6	2683	64 45 3	2700	63 8 23	2718	61 32 7	2735
	Jupiter	E.	67 20 12	2741	65 44 26	2759	64 9 4	2775	62 34 4	2793
	Sun	E.	110 32 45	3039	109 3 21	3059	107 34 21	3077	106 5 43	3096
29	α Arietis	W.	111 40 5	2873	113 12 58	2890	114 45 30	2905	116 17 42	2921
	Aldebaran	W.	81 16 26	2864	82 49 31	2878	84 22 18	2893	85 54 46	2907
	Pollux	W.	37 13 43	2814	38 47 53	2828	40 21 44	2842	41 55 17	2857
	Mars	E.	47 42 54	3026	46 13 13	3041	44 43 51	3056	43 14 48	3071
	Spica	E.	53 36 14	2815	52 2 6	2831	50 28 18	2846	48 54 50	2860
	Jupiter	E.	54 44 33	2874	53 11 41	2889	51 39 8	2904	50 6 54	2919
	Sun	E.	98 48 3	3183	97 21 33	3199	95 55 23	3214	94 29 31	3231
30	Aldebaran	W.	93 32 48	2972	95 3 36	2984	96 34 9	2995	98 4 28	3006
	Pollux	W.	49 38 39	2920	51 10 32	2932	52 42 10	2944	54 13 33	2954
	Mars	E.	35 53 58	3140	34 26 37	3153	32 59 31	3164	31 32 39	3175
	Spica	E.	41 11 57	2927	39 40 13	2939	38 8 44	2951	36 37 30	2963
	Jupiter	E.	42 30 10	2984	40 59 37	2996	39 29 19	3008	37 59 16	3019
	Sun	E.	87 24 38	3301	86 0 28	3315	84 36 34	3327	83 12 54	3338

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	16 29 53.64	10.803	S. 21 50 31.5	−23.20	16 16.01	70.32	10 46.27	0.945
Wed.	2	16 34 13.27	10.831	21 59 36.1	22.15	16 16.15	70.40	10 23.26	0.972
Thur.	3	16 38 33.53	10.858	22 8 15.4	21.10	16 16.29	70.48	9 59.62	0.999
Frid.	4	16 42 54.39	10.883	22 16 28.9	20.02	16 16.42	70.56	9 35.38	1.024
Sat.	5	16 47 15.86	10.907	22 24 16.5	18.92	16 16.55	70.64	9 10.54	1.048
Sun.	6	16 51 37.89	10.930	22 31 37.9	17.83	16 16.67	70.71	8 45.14	1.071
Mon.	7	16 56 0.44	10.951	22 38 32.9	16.73	16 16.79	70.78	8 19.21	1.092
Tues.	8	17 0 23.50	10.971	22 45 1.2	15.61	16 16.91	70.84	7 52.79	1.112
Wed.	9	17 4 47.02	10.989	22 51 2.6	14.48	16 17.03	70.90	7 25.90	1.130
Thur.	10	17 9 10.98	11.007	22 56 37.0	13.35	16 17.14	70.96	6 58.57	1.148
Frid.	11	17 13 35.34	11.023	23 1 44.0	12.21	16 17.25	71.01	6 30.85	1.164
Sat.	12	17 18 0.08	11.037	23 6 23.6	11.07	16 17.36	71.06	6 2.74	1.178
Sun.	13	17 22 25.15	11.051	23 10 35.6	9.92	16 17.46	71.10	5 34.30	1.192
Mon.	14	17 26 50.50	11.062	23 14 19.8	8.77	16 17.56	71.14	5 5.58	1.203
Tues.	15	17 31 16.12	11.072	23 17 36.1	7.60	16 17.65	71.18	4 36.61	1.213
Wed.	16	17 35 41.97	11.081	23 20 24.4	6.43	16 17.74	71.21	4 7.40	1.222
Thur.	17	17 40 8.01	11.089	23 22 44.7	5.25	16 17.82	71.24	3 38.00	1.229
Frid.	18	17 44 34.21	11.094	23 24 36.8	4.08	16 17.90	71.26	3 8.44	1.234
Sat.	19	17 49 0.54	11.099	23 26 0.7	2.91	16 17.97	71.28	2 38.75	1.239
Sun.	20	17 53 26.97	11.103	23 26 56.5	1.73	16 18.04	71.29	2 8.96	1.243
Mon.	21	17 57 53.47	11.105	23 27 24.0	− 0.55	16 18.10	71.30	1 39.09	1.245
Tues.	22	18 2 20.02	11.106	23 27 23.1	+ 0.63	16 18.16	71.31	1 9.18	1.246
Wed.	23	18 6 46.56	11.105	23 26 53.9	1.81	16 18.21	71.31	0 39.28	1.245
Thur.	24	18 11 13.07	11.104	23 25 56.6	2.98	16 18.25	71.30	0 9.41	1.244
Frid.	25	18 15 39.53	11.101	23 24 31.1	4.16	16 18.29	71.29	0 20.41	1.241
Sat.	26	18 20 5.91	11.097	23 22 37.4	5.33	16 18.32	71.28	0 50.14	1.237
Sun.	27	18 24 32.18	11.092	23 20 15.4	6.51	16 18.34	71.26	1 19.77	1.232
Mon.	28	18 28 58.30	11.086	23 17 25.3	7.67	16 18.36	71.23	1 49.25	1.226
Tues.	29	18 33 24.26	11.078	23 14 7.3	8.83	16 18.37	71.20	2 18.55	1.218
Wed.	30	18 37 50.00	11.068	23 10 21.3	9.99	16 18.38	71.17	2 47.64	1.208
Thur.	31	18 42 15.51	11.058	23 6 7.4	11.16	16 18.38	71.13	3 16.51	1.198
Frid.	32	18 46 40.74	11.046	S. 23 1 25.7	+12.32	16 18.38	71.09	3 45.10	1.186

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting $0^{s}.19$ from the Sidereal Time.

— prefixed to the hourly change of declination, indicates that north declinations are decreasing, and south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be added to* / *subtracted from* *Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	16 29 55.59	10.801	S. 21 50 35.8	-23.19	10 46.10	0.945	16 40 41.69
Wed.	2	16 34 15.16	10.828	21 59 40.0	22.14	10 23.09	0.972	16 44 38.25
Thur.	3	16 38 35.35	10.855	22 8 19.0	21.09	9 59.46	0.999	16 48 34.81
Frid.	4	16 42 56.15	10.880	22 16 32.2	20.01	9 35.22	1.024	16 52 31.37
Sat.	5	16 47 17.55	10.904	22 24 19.5	18.92	9 10.38	1.048	16 56 27.93
Sun.	6	16 51 39.50	10.927	22 31 40.6	17.82	8 44.96	1.071	17 0 24.48
Mon.	7	16 56 1.98	10.948	22 38 35.3	16.72	8 19.06	1.092	17 4 21.04
Tues.	8	17 0 24.96	10.968	22 45 3.3	15.60	7 52.64	1.112	17 8 17.60
Wed.	9	17 4 48.40	10.986	22 51 4.4	14.47	7 25.76	1.130	17 12 14.16
Thur.	10	17 9 12.28	11.004	22 56 38.6	13.34	6 58.44	1.148	17 16 10.72
Frid.	11	17 13 36.56	11.020	23 1 45.4	12.20	6 30.72	1.164	17 20 7.28
Sat.	12	17 18 1.22	11.034	23 6 24.8	11.06	6 2.62	1.178	17 24 3.84
Sun.	13	17 22 26.20	11.048	23 10 36.5	9.91	5 34.19	1.192	17 28 0.39
Mon.	14	17 26 51.47	11.059	23 14 20.5	8.76	5 5.48	1.203	17 31 56.95
Tues.	15	17 31 17.00	11.069	23 17 36.7	7.59	4 36.51	1.213	17 35 53.51
Wed.	16	17 35 42.76	11.078	23 20 24.9	6.42	4 7.31	1.222	17 39 50.07
Thur.	17	17 40 8.71	11.085	23 22 45.0	5.25	3 37.92	1.229	17 43 46.63
Frid.	18	17 44 34.82	11.090	23 24 37.0	4.08	3 8.37	1.234	17 47 43.19
Sat.	19	17 49 1.06	11.095	23 26 0.8	2.91	2 38.69	1.239	17 51 39.75
Sun.	20	17 53 27.40	11.099	23 26 56.5	1.73	2 8.91	1.243	17 55 36.31
Mon.	21	17 57 53.81	11.101	23 27 24.0	- 0.55	1 39.05	1.245	17 59 32.86
Tues.	22	18 2 20.27	11.102	23 27 23.1	+ 0.63	1 9.15	1.246	18 3 29.42
Wed.	23	18 6 46.71	11.101	23 26 53.9	1.81	0 39.26	1.245	18 7 25.97
Thur.	24	18 11 13.13	11.100	23 25 56.6	2.98	0 9.41	1.244	18 11 22.54
Frid.	25	18 15 39.50	11.097	23 24 31.1	4.16	0 20.41	1.241	18 15 19.09
Sat.	26	18 20 5.79	11.093	23 22 37.4	5.33	0 50.13	1.237	18 19 15.66
Sun.	27	18 24 31.96	11.088	23 20 15.5	6.51	1 19.75	1.232	18 23 12.21
Mon.	28	18 28 57.99	11.082	23 17 25.5	7.67	1 49.21	1.226	18 27 8.78
Tues.	29	18 33 23.85	11.074	23 14 7.6	8.83	2 18.51	1.218	18 31 5.34
Wed.	30	18 37 49.50	11.064	23 10 21.7	9.99	2 47.60	1.208	18 35 1.90
Thur.	31	18 42 14.91	11.054	23 6 7.9	11.15	3 16.46	1.198	18 38 58.45
Frid.	32	18 46 40.05	11.042	S. 23 1 26.4	+12.31	3 45.04	1.186	18 42 55.01

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	335	249 10 57.7	10 19.4	152.16	+0.46	9.9937229	−26.5	7 18 6.33
2	336	250 11 50.4	11 12.0	152.22	0.36	.9936603	25.7	7 14 10.42
3	337	251 12 44.4	12 5.8	152.28	0.23	.9935996	25.0	7 10 14.51
4	338	252 13 39.8	13 1.0	152.33	+0.10	.9935406	24.3	7 6 18.60
5	339	253 14 36.4	13 57.4	152.38	−0.02	.9934831	23.6	7 2 22.68
6	340	254 15 34.2	14 55.0	152.43	0.15	.9934271	23.0	6 58 26.77
7	341	255 16 33.0	15 53.6	152.47	0.26	.9933725	22.4	6 54 30.86
8	342	256 17 32.8	16 53.2	152.51	0.37	.9933194	21.8	6 50 34.95
9	343	257 18 33.5	17 53.7	152.55	0.44	.9932677	21.2	6 46 39.03
10	344	258 19 35.1	18 55.1	152.58	0.48	.9932174	20.6	6 42 43.12
11	345	259 20 37.5	19 57.3	152.61	0.48	.9931687	19.9	6 38 47.21
12	346	260 21 40.5	21 0.1	152.63	0.47	.9931216	19.2	6 34 51.30
13	347	261 22 43.9	22 3.3	152.65	0.43	.9930763	18.5	6 30 55.38
14	348	262 23 47.9	23 7.1	152.67	0.35	.9930327	17.8	6 26 59.47
15	349	263 24 52.2	24 11.2	152.69	0.25	.9929910	17.0	6 23 3.56
16	350	264 25 56.8	25 15.6	152.70	−0.13	.9929513	16.1	6 19 7.64
17	351	265 27 1.7	26 20.3	152.71	0.00	.9929138	15.1	6 15 11.73
18	352	266 28 7.0	28 25.4	152.72	+0.13	.9928786	14.1	6 11 15.82
19	353	267 29 12.5	28 30.7	152.73	0.26	.9928459	13.0	6 7 19.91
20	354	268 30 18.3	29 36.3	152.74	0.39	.9928158	11.9	6 3 24.00
21	355	269 31 24.4	30 42.2	152.76	0.49	.9927884	10.8	5 59 28.08
22	356	270 32 30.8	31 48.4	152.77	0.58	.9927639	9.6	5 55 32.17
23	357	271 33 37.5	32 54.9	152.78	0.64	.9927422	8.5	5 51 36.26
24	358	272 34 44.5	34 1.7	152.80	0.68	.9927233	7.3	5 47 40.34
25	359	273 35 51.8	35 8.8	152 81	0.69	.9927072	6.1	5 43 44.42
26	360	274 36 59.6	36 16.5	152.83	0.66	.9926940	4.9	5 39 48.51
27	361	275 38 7.8	37 24.5	152.84	0.60	.9926835	3.8	5 35 52.60
28	362	276 39 16.4	38 32.9	152.86	0.50	.9926756	2.8	5 31 56.68
29	363	277 40 25.3	39 41.6	152.87	0.40	.9926702	1.8	5 28 0.76
30	364	278 41 34.6	40 50.7	152.89	0.28	.9926670	− 0.8	5 24 4.85
31	365	279 42 44.3	42 0.2	152.91	0.16	.9926665	+ 0.1	5 20 8.94
32	366	280 43 54.4	43 10.1	152.93	+0.03	9.9926680	+ 1.1	5 16 13.02

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
—9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 0.4	14 56.3	54 57.8	−1.35	54 42.8	−1.14	19 9.1	1.65	22.3
2	14 52.9	14 50.2	54 30.3	0.94	54 20.2	0.74	19 48.2	1.62	23.3
3	14 48.1	14 46.6	54 12.4	0.55	54 7.0	0.35	20 27.4	1.65	24.3
4	14 45.7	14 45.4	54 3.9	−0.17	54 2.8	−0.01	21 7.7	1.72	25.3
5	14 45.7	14 46.4	54 3.7	+0.15	54 6.3	+0.29	21 50.2	1.83	26.3
6	14 47.5	14 49.1	54 10.6	0.42	54 16.4	0.54	22 35.6	1.96	27.3
7	14 51.1	14 53.4	54 23.5	0.64	54 31.8	0.74	23 24.4	2.10	28.3
8	14 55.9	14 58.7	54 41.2	0.82	54 51.5	0.89	6		29.3
9	15 1.7	15 4.9	55 2.6	0.96	55 14.4	1.02	0 16.4	2.22	0.5
10	15 8.3	15 11.9	55 27.0	1.07	55 40.1	1.12	1 10.5	2.28	1.5
11	15 15.6	15 19.5	55 53.8	1.17	56 8.1	1.21	2 5.3	2.27	2.5
12	15 23.5	15 27.7	56 22.9	1.26	56 38.3	1.30	2 59.2	2.21	3.5
13	15 32.1	15 36.6	56 54.2	1.35	57 10.7	1.39	3 51.0	2.11	4.5
14	15 41.2	15 45.9	57 27.6	1.43	57 45.0	1.46	4 40.4	2.02	5.5
15	15 50.7	15 55.6	58 2.6	1.48	58 20.5	1.49	5 28.0	1.96	6.5
16	16 0.4	16 5.2	58 38.3	1.48	58 55.9	1.45	6 14.8	1.95	7.5
17	16 9.9	16 14.3	59 12.9	1.38	59 29.0	1.29	7 2.0	2.00	8.5
18	16 18.3	16 21.8	59 43.7	1.16	59 56.7	1.00	7 51.2	2.11	9.5
19	16 24.7	16 27.0	60 7.5	0.79	60 15.7	0.56	8 43.7	2.27	10.5
20	16 28.4	16 28.9	60 20.8	+0.29	60 22.6	+0.00	9 40.6	2.47	11.5
21	16 28.4	16 26.9	60 20.9	−0.30	60 15.4	−0.61	10 41.9	2.63	12.5
22	16 24.4	16 21.0	60 6.3	0.91	59 53.7	1.19	11 46.1	2.69	13.5
23	16 16.6	16 11.5	59 37.8	1.45	59 18.9	1.68	12 50.1	2.62	14.5
24	16 5.7	15 59.4	58 57.6	1.86	58 34.3	2.00	13 51.0	2.43	15.5
25	15 52.7	15 45.7	58 9.6	2.10	57 44.1	2.14	14 46.6	2.20	16.5
26	15 38.7	15 31.7	57 18.4	2.14	56 52.9	2.10	15 36.9	1.98	17.5
27	15 25.0	15 18.6	56 28.2	2.01	56 4.7	1.89	16 22.4	1.82	18.5
28	15 12.6	15 7.2	55 42.9	1.75	55 22.9	1.58	17 4.6	1.71	19.5
29	15 2.4	14 58.2	55 5.1	1.39	54 49.6	1.19	17 44.7	1.65	20.5
30	14 54.6	14 51.8	54 36.6	0.97	54 26.2	0.76	18 24.1	1.65	21.5
31	14 49.7	14 48.3	54 18.4	0.54	54 13.3	−0.32	19 4.1	1.69	22.5
32	14 47.6	14 47.5	54 10.7	−0.11	54 10.6	+0.10	19 45.6	1.78	23.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 18 36.47	1.8191	N. 7 58 8.2	13.857
1	11 20 25.51	1.8156	7 44 16.2	13.875
2	11 22 14.34	1.8122	7 30 23.2	13.893
3	11 24 2.97	1.8090	7 16 29.1	13.910
4	11 25 51.41	1.8058	7 2 34.0	13.926
5	11 27 39.66	1.8026	6 48 38.0	13.940
6	11 29 27.72	1.7995	6 34 41.2	13.954
7	11 31 15.60	1.7966	6 20 43.5	13.968
8	11 33 3.31	1.7938	6 6 45.1	13.980
9	11 34 50.85	1.7911	5 52 45.9	13.992
10	11 36 38.23	1.7884	5 38 46.0	14.003
11	11 38 25.45	1.7857	5 24 45.5	14.014
12	11 40 12.51	1.7832	5 10 44.3	14.024
13	11 41 59.43	1.7808	4 56 42.6	14.033
14	11 43 46.20	1.7784	4 42 40.4	14.041
15	11 45 32.83	1.7761	4 28 37.7	14.048
16	11 47 19.32	1.7739	4 14 34.6	14.055
17	11 49 5.69	1.7718	4 0 31.1	14.061
18	11 50 51.93	1.7697	3 46 27.3	14.067
19	11 52 38.05	1.7677	3 32 23.1	14.072
20	11 54 24.05	1.7658	3 18 18.7	14.075
21	11 56 9.94	1.7640	3 4 14.1	14.078
22	11 57 55.73	1.7623	2 50 9.3	14.081
23	11 59 41.41	1.7606	N. 2 36 4.4	14.083

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 1 27.00	1.7591	N. 2 21 59.3	14.085
1	12 3 12.50	1.7577	2 7 54.2	14.085
2	12 4 57.92	1.7563	1 53 49.1	14.085
3	12 6 43.25	1.7550	1 39 44.0	14.085
4	12 8 28.51	1.7538	1 25 38.9	14.083
5	12 10 13.70	1.7526	1 11 34.0	14.081
6	12 11 58.82	1.7515	0 57 29.2	14.078
7	12 13 43.88	1.7505	0 43 24.6	14.075
8	12 15 28.88	1.7497	0 29 20.2	14.071
9	12 17 13.84	1.7490	0 15 16.1	14.066
10	12 18 58.76	1.7483	N. 0 1 12.3	14.060
11	12 20 43.63	1.7475	S. 0 12 51.1	14.054
12	12 22 28.45	1.7468	0 26 54.2	14.048
13	12 24 13.24	1.7463	0 40 56.8	14.040
14	12 25 58.00	1.7459	0 54 59.0	14.032
15	12 27 42.74	1.7456	1 9 0.7	14.024
16	12 29 27.46	1.7453	1 23 1.9	14.014
17	12 31 12.17	1.7450	1 37 2.4	14.004
18	12 32 56.86	1.7448	1 51 2.3	13.993
19	12 34 41.55	1.7448	2 5 1.6	13.982
20	12 36 26.24	1.7448	2 19 0.2	13.970
21	12 38 10.93	1.7449	2 32 58.0	13.957
22	12 39 55.63	1.7451	2 46 55.0	13.944
23	12 41 40.35	1.7454	3 0 51.2	13.930
24	12 43 25.08	1.7457	S. 3 14 46.6	13.916

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 43 25.08	1.7457	S. 3 14 46.6	13.916
1	12 45 9.83	1.7461	3 28 41.1	13.900
2	12 46 54.61	1.7466	3 42 34.6	13.884
3	12 48 39.42	1.7471	3 56 27.1	13.867
4	12 50 24.26	1.7478	4 10 18.6	13.850
5	12 52 9.15	1.7485	4 24 9.1	13.833
6	12 53 54.08	1.7493	4 37 58.5	13.814
7	12 55 39.06	1.7501	4 51 46.8	13.795
8	12 57 24.09	1.7510	5 5 33.9	13.774
9	12 59 9.18	1.7520	5 19 19.7	13.753
10	13 0 54.33	1.7531	5 33 4.3	13.732
11	13 2 39.55	1.7542	5 46 47.6	13.710
12	13 4 24.83	1.7554	6 0 29.5	13.688
13	13 6 10.19	1.7567	6 14 10.1	13.664
14	13 7 55.63	1.7581	6 27 49.2	13.640
15	13 9 41.16	1.7595	6 41 26.9	13.616
16	13 11 26.77	1.7610	6 55 3.1	13.591
17	13 13 12.48	1.7626	7 8 37.8	13.565
18	13 14 58.28	1.7642	7 22 10.9	13.538
19	13 16 44.18	1.7659	7 35 42.3	13.510
20	13 18 30.19	1.7677	7 49 12.1	13.483
21	13 20 16.31	1.7696	8 2 40.3	13.454
22	13 22 2.55	1.7715	8 16 6.6	13.424
23	13 23 48.90	1.7735	S. 8 29 31.1	13.394

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 25 35.37	1.7755	S. 8 42 53.9	13.363
1	13 27 21.96	1.7777	8 56 14.7	13.331
2	13 29 8.69	1.7800	9 9 33.6	13.299
3	13 30 55.55	1.7822	9 22 50.6	13.267
4	13 32 42.55	1.7845	9 36 5.6	13.233
5	13 34 29.69	1.7869	9 49 18.5	13.198
6	13 36 16.98	1.7894	10 2 29.3	13.163
7	13 38 4.42	1.7919	10 15 38.0	13.127
8	13 39 52.01	1.7945	10 28 44.5	13.089
9	13 41 39.76	1.7972	10 41 48.7	13.051
10	13 43 27.68	1.8000	10 54 50.6	13.013
11	13 45 15.76	1.8028	11 7 50.2	12.974
12	13 47 4.01	1.8057	11 20 47.5	12.935
13	13 48 52.44	1.8086	11 33 42.4	12.894
14	13 50 41.04	1.8115	11 46 34.8	12.853
15	13 52 29.82	1.8146	11 59 24.7	12.810
16	13 54 18.79	1.8178	12 12 12.0	12.767
17	13 56 7.95	1.8210	12 24 56.7	12.723
18	13 57 57.30	1.8242	12 37 38.8	12.679
19	13 59 46.85	1.8275	12 50 18.2	12.633
20	14 1 36.60	1.8308	13 2 54.8	12.587
21	14 3 26.55	1.8342	13 15 28.6	12.540
22	14 5 16.71	1.8377	13 27 59.6	12.493
23	14 7 7.08	1.8413	13 40 27.7	12.444
24	14 8 57.67	1.8449	S. 13 52 52.9	12.395

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 5.					MONDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 8 57.67	1.8449	S. 13 52 52.9	12.395	0	15 42 37.06	2.0720	S. 22 33 46.5	8.939
1	14 10 48.47	1.8486	14 5 15.1	12.344	1	15 44 41.54	2.0774	22 42 40.0	8.843
2	14 12 39.50	1.8523	14 17 34.2	12.293	2	15 46 46.35	2.0829	22 51 27.6	8.745
3	14 14 30.75	1.8561	14 29 50.3	12.242	3	15 48 51.48	2.0883	23 0 9.4	8.647
4	14 16 22.23	1.8599	14 42 3.2	12.189	4	15 50 56.94	2.0937	23 8 45.2	8.547
5	14 18 13.94	1.8638	14 54 12.9	12.135	5	15 53 2.72	2.0991	23 17 15.0	8.447
6	14 20 5.89	1.8678	15 6 19.4	12.081	6	15 55 8.83	2.1045	23 25 38.8	8.345
7	14 21 58.08	1.8718	15 18 22.6	12.025	7	15 57 15.26	2.1099	23 33 56.4	8.242
8	14 23 50.51	1.8758	15 30 22.4	11.969	8	15 59 22.02	2.1154	23 42 7.8	8.138
9	14 25 43.18	1.8799	15 42 18.8	11.912	9	16 1 29.10	2.1208	23 50 13.0	8.034
10	14 27 36.10	1.8841	15 54 11.8	11.853	10	16 3 36.51	2.1262	23 58 11.9	7.927
11	14 29 29.27	1.8884	16 6 1.2	11.794	11	16 5 44.24	2.1316	24 6 4.3	7.820
12	14 31 22.70	1.8927	16 17 47.1	11.735	12	16 7 52.29	2.1369	24 13 50.3	7.712
13	14 33 16.39	1.8970	16 29 29.4	11.674	13	16 10 0.66	2.1423	24 21 29.8	7.603
14	14 35 10.34	1.9013	16 41 8.0	11.612	14	16 12 9.36	2.1477	24 29 2.7	7.493
15	14 37 4.55	1.9057	16 52 42.8	11.549	15	16 14 18.38	2.1530	24 36 29.0	7.382
16	14 38 59.03	1.9102	17 4 13.9	11.486	16	16 16 27.71	2.1582	24 43 48.6	7.270
17	14 40 53.78	1.9146	17 15 41.1	11.422	17	16 18 37.36	2.1635	24 51 1.4	7.158
18	14 42 48.79	1.9191	17 27 4.5	11.357	18	16 20 47.33	2.1687	24 58 7.5	7.044
19	14 44 44.08	1.9238	17 38 23.9	11.290	19	16 22 57.61	2.1739	25 5 6.7	6.928
20	14 46 39.65	1.9285	17 49 39.3	11.224	20	16 25 8.20	2.1791	25 11 58.9	6.812
21	14 48 35.50	1.9332	18 0 50.7	11.156	21	16 27 19.10	2.1843	25 18 44.1	6.695
22	14 50 31.63	1.9379	18 11 58.0	11.086	22	16 29 30.31	2.1894	25 25 22.3	6.577
23	14 52 28.05	1.9427	S. 18 23 1.0	11.015	23	16 31 41.83	2.1945	S. 25 31 53.3	6.458
	SUNDAY 6.					TUESDAY 8.			
0	14 54 24.76	1.9475	S. 18 33 59.8	10.944	0	16 33 53.65	2.1996	S. 25 38 17.2	6.338
1	14 56 21.75	1.9523	18 44 54.3	10.873	1	16 36 5.78	2.2046	25 44 33.9	6.217
2	14 58 19.04	1.9572	18 55 44.5	10.800	2	16 38 18.20	2.2095	25 50 43.2	6.094
3	15 0 16.62	1.9621	19 6 30.3	10.726	3	16 40 30.92	2.2145	25 56 45.2	5.972
4	15 2 14.50	1.9670	19 17 11.6	10.650	4	16 42 43.94	2.2194	26 2 39.8	5.848
5	15 4 12.67	1.9720	19 27 48.3	10.574	5	16 44 57.25	2.2242	26 8 26.9	5.723
6	15 6 11.14	1.9771	19 38 20.5	10.498	6	16 47 10.85	2.2290	26 14 6.5	5.597
7	15 8 9.92	1.9822	19 48 48.1	10.420	7	16 49 24.74	2.2338	26 19 38.5	5.470
8	15 10 9.00	1.9873	19 59 10.9	10.341	8	16 51 38.91	2.2384	26 25 2.9	5.343
9	15 12 8.39	1.9924	20 9 29.0	10.261	9	16 53 53.35	2.2430	26 30 19.6	5.214
10	15 14 8.09	1.9976	20 19 42.3	10.180	10	16 56 8.07	2.2476	26 35 28.6	5.084
11	15 16 8.10	2.0028	20 29 50.6	10.098	11	16 58 23.06	2.2522	26 40 29.7	4.953
12	15 18 8.42	2.0080	20 39 54.0	10.015	12	17 0 38.33	2.2567	26 45 23.0	4.822
13	15 20 9.05	2.0132	20 49 52.4	9.931	13	17 2 53.86	2.2610	26 50 8.4	4.690
14	15 22 10.00	2.0185	20 59 45.7	9.846	14	17 5 9.65	2.2653	26 54 45.8	4.557
15	15 24 11.27	2.0238	21 9 33.9	9.760	15	17 7 25.70	2.2695	26 59 15.2	4.423
16	15 26 12.85	2.0291	21 19 16.9	9.673	16	17 9 42.00	2.2737	27 3 36.6	4.288
17	15 28 14.75	2.0344	21 28 54.7	9.585	17	17 11 58.55	2.2779	27 7 49.8	4.153
18	15 30 16.97	2.0397	21 38 27.1	9.495	18	17 14 15.35	2.2820	27 11 54.9	4.017
19	15 32 19.51	2.0450	21 47 54.1	9.405	19	17 16 32.39	2.2859	27 15 51.8	3.879
20	15 34 22.37	2.0504	21 57 15.7	9.314	20	17 18 49.66	2.2897	27 19 40.4	3.742
21	15 36 25.56	2.0558	22 6 31.8	9.222	21	17 21 7.16	2.2935	27 23 20.8	3.603
22	15 38 29.07	2.0612	22 15 42.4	9.129	22	17 23 24.89	2.2973	27 26 52.8	3.463
23	15 40 32.90	2.0666	22 24 47.3	9.034	23	17 25 42.84	2.3010	27 30 16.4	3.323
24	15 42 37.06	2.0720	S. 22 33 46.5	8.939	24	17 28 1.01	2.3046	S. 27 33 31.6	3.183

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 28 1.01	2.3046	S.27 33 31.6	3.183
1	17 30 19.39	2.3081	27 36 38.3	3.041
2	17 32 37.98	2.3115	27 39 36.5	2.899
3	17 34 56.77	2.3147	27 42 26.2	2.757
4	17 37 15.75	2.3179	27 45 7.3	2.613
5	17 39 34.92	2.3211	27 47 39.7	2.468
6	17 41 54.28	2.3241	27 50 3.5	2.324
7	17 44 13.81	2.3270	27 52 18.6	2.178
8	17 46 33.52	2.3299	27 54 24.9	2.033
9	17 48 53.40	2.3326	27 56 22.5	1.887
10	17 51 13.44	2.3352	27 58 11.3	1.739
11	17 53 33.63	2.3378	27 59 51.2	1.592
12	17 55 53.98	2.3403	28 1 22.3	1.444
13	17 58 14.47	2.3426	28 2 44.5	1.295
14	18 0 35.09	2.3448	28 3 57.7	1.146
15	18 2 55.85	2.3470	28 5 2.0	0.997
16	18 5 16.73	2.3490	28 5 57.3	0.847
17	18 7 37.73	2.3510	28 6 43.6	0.698
18	18 9 58.85	2.3528	28 7 21.0	0.547
19	18 12 20.07	2.3545	28 7 49.3	0.396
20	18 14 41.39	2.3562	28 8 8.5	0.245
21	18 17 2.81	2.3577	28 8 18.7	−0.093
22	18 19 24.31	2.3590	28 8 19.7	+0.059
23	18 21 45.89	2.3603	S.28 8 11.6	0.211

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 24 7.55	2.3615	S.28 7 54.4	0.363
1	18 26 29.27	2.3626	28 7 28.1	0.515
2	18 28 51.06	2.3636	28 6 52.6	0.667
3	18 31 12.90	2.3644	28 6 8.0	0.820
4	18 33 34.79	2.3651	28 5 14.2	0.973
5	18 35 56.72	2.3658	28 4 11.2	1.126
6	18 38 18.69	2.3664	28 2 59.1	1.279
7	18 40 40.69	2.3668	28 1 37.7	1.432
8	18 43 2.70	2.3670	28 0 7.2	1.585
9	18 45 24.73	2.3672	27 58 27.5	1.738
10	18 47 46.77	2.3673	27 56 38.6	1.892
11	18 50 8.81	2.3674	27 54 40.4	2.046
12	18 52 30.86	2.3673	27 52 33.0	2.200
13	18 54 52.89	2.3670	27 50 16.4	2.353
14	18 57 14.90	2.3667	27 47 50.6	2.506
15	18 59 36.89	2.3663	27 45 15.7	2.658
16	19 1 58.85	2.3657	27 42 31.6	2.812
17	19 4 20.77	2.3651	27 39 38.3	2.964
18	19 6 42.66	2.3644	27 36 35.9	3.117
19	19 9 4.50	2.3635	27 33 24.3	3.269
20	19 11 26.28	2.3625	27 30 3.6	3.422
21	19 13 48.00	2.3615	27 26 33.7	3.574
22	19 16 9.66	2.3603	27 22 54.7	3.726
23	19 18 31.24	2.3591	27 19 6.6	3.878
24	19 20 52.75	2.3578	S.27 15 9.4	4.028

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 20 52.75	2.3578	S.27 15 9.4	4.028
1	19 23 14.18	2.3563	27 11 3.2	4.178
2	19 25 35.51	2.3547	27 6 48.0	4.329
3	19 27 56.75	2.3531	27 2 23.7	4.480
4	19 30 17.89	2.3514	26 57 50.4	4.629
5	19 32 38.92	2.3496	26 53 8.2	4.778
6	19 34 59.85	2.3478	26 48 17.0	4.928
7	19 37 20.66	2.3458	26 43 16.9	5.076
8	19 39 41.35	2.3437	26 38 7.9	5.223
9	19 42 1.91	2.3416	26 32 50.1	5.371
10	19 44 22.34	2.3394	26 27 23.4	5.518
11	19 46 42.64	2.3372	26 21 48.0	5.663
12	19 49 2.80	2.3348	26 16 3.8	5.810
13	19 51 22.81	2.3323	26 10 10.8	5.956
14	19 53 42.67	2.3298	26 4 9.1	6.100
15	19 56 2.38	2.3272	25 57 58.8	6.244
16	19 58 21.93	2.3245	25 51 39.8	6.388
17	20 0 41.32	2.3218	25 45 12.2	6.531
18	20 3 0.55	2.3190	25 38 36.1	6.673
19	20 5 19.60	2.3161	25 31 51.4	6.815
20	20 7 38.48	2.3133	25 24 58.3	6.955
21	20 9 57.19	2.3103	25 17 56.8	7.095
22	20 12 15.71	2.3072	25 10 46.9	7.235
23	20 14 34.05	2.3042	S.25 3 28.6	7.374

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 16 52.21	2.3010	S.24 56 2.0	7.513
1	20 19 10.17	2.2978	24 48 27.1	7.650
2	20 21 27.94	2.2946	24 40 44.0	7.786
3	20 23 45.52	2.2914	24 32 52.8	7.922
4	20 26 2.90	2.2880	24 24 53.4	8.057
5	20 28 20.07	2.2846	24 16 46.0	8.191
6	20 30 37.04	2.2812	24 8 30.5	8.324
7	20 32 53.80	2.2777	24 0 7.1	8.457
8	20 35 10.36	2.2743	23 51 35.7	8.589
9	20 37 26.71	2.2708	23 42 56.4	8.720
10	20 39 42.84	2.2672	23 34 9.3	8.849
11	20 41 58.76	2.2637	23 25 14.5	8.978
12	20 44 14.47	2.2600	23 16 11.9	9.107
13	20 46 29.95	2.2563	23 7 1.6	9.234
14	20 48 45.22	2.2527	22 57 43.8	9.360
15	20 51 0.27	2.2491	22 48 18.4	9.486
16	20 53 15.10	2.2454	22 38 45.5	9.611
17	20 55 29.71	2.2417	22 29 5.1	9.735
18	20 57 44.09	2.2379	22 19 17.3	9.858
19	20 59 58.25	2.2342	22 9 22.2	9.979
20	21 2 12.19	2.2305	21 59 19.8	10.100
21	21 4 25.90	2.2268	21 49 10.2	10.220
22	21 6 39.39	2.2231	21 38 53.4	10.339
23	21 8 52.66	2.2193	21 28 29.6	10.457
24	21 11 5.70	2.2156	S.21 17 58.7	10.573

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 13.					**TUESDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 11 5.70	2.2156	S.21 17 58.7	10.573	0	22 53 32.48	2.0692	S.10 55 34.9	14.943
1	21 13 18.52	2.2118	21 7 20.8	10.689	1	22 55 36.58	2.0675	10 40 36.4	15.006
2	21 15 31.11	2.2080	20 56 36.0	10.804	2	22 57 40.58	2.0658	10 25 34.2	15.069
3	21 17 43.48	2.2043	20 45 44.3	10.918	3	22 59 44.48	2.0641	10 10 28.2	15.131
4	21 19 55.63	2.2006	20 34 45.8	11.031	4	23 1 48.28	2.0625	9 55 18.5	15.191
5	21 22 7.55	2.1969	20 23 40.6	11.143	5	23 3 51.99	2.0610	9 40 5.3	15.250
6	21 24 19.25	2.1932	20 12 28.6	11.255	6	23 5 55.61	2.0596	9 24 48.5	15.309
7	21 26 30.73	2.1895	20 1 10.0	11.365	7	23 7 59.15	2.0584	9 9 28.2	15.366
8	21 28 41.99	2.1858	19 49 44.9	11.473	8	23 10 2.62	2.0572	8 54 4.6	15.421
9	21 30 53.02	2.1821	19 38 13.3	11.581	9	23 12 6.02	2.0560	8 38 37.7	15.476
10	21 33 3.83	2.1785	19 26 35.2	11.689	10	23 14 9.35	2.0549	8 23 7.5	15.529
11	21 35 14.43	2.1749	19 14 50.8	11.794	11	23 16 12.62	2.0540	8 7 34.2	15.581
12	21 37 24.81	2.1712	19 3 0.0	11.899	12	23 18 15.84	2.0531	7 51 57.8	15.633
13	21 39 34.97	2.1676	18 51 2.9	12.003	13	23 20 19.00	2.0522	7 36 18.3	15.683
14	21 41 44.92	2.1640	18 38 59.7	12.105	14	23 22 22.11	2.0515	7 20 35.9	15.731
15	21 43 54.65	2.1604	18 26 50.4	12.206	15	23 24 25.18	2.0508	7 4 50.6	15.778
16	21 46 4.17	2.1569	18 14 35.0	12.306	16	23 26 28.21	2.0503	6 49 2.5	15.825
17	21 48 13.48	2.1535	18 2 13.7	12.405	17	23 28 31.22	2.0498	6 33 11.6	15.870
18	21 50 22.59	2.1501	17 49 46.4	12.504	18	23 30 34.19	2.0493	6 17 18.1	15.913
19	21 52 31.49	2.1467	17 37 13.2	12.601	19	23 32 37.14	2.0491	6 1 22.0	15.956
20	21 54 40.19	2.1433	17 24 34.3	12.697	20	23 34 40.08	2.0488	5 45 23.4	15.998
21	21 56 48.68	2.1400	17 11 49.6	12.793	21	23 36 43.00	2.0485	5 29 22.3	16.038
22	21 58 56.98	2.1367	16 58 59.2	12.887	22	23 38 45.91	2.0484	5 13 18.8	16.077
23	22 1 5.08	2.1335	S.16 46 3.2	12.979	23	23 40 48.82	2.0485	S. 4 57 13.0	16.115
	MONDAY 14.					**WEDNESDAY 16.**			
0	22 3 12.99	2.1303	S.16 33 1.7	13.071	0	23 42 51.74	2.0486	S. 4 41 5.0	16.152
1	22 5 20.71	2.1271	16 19 54.7	13.162	1	23 44 54.66	2.0488	4 24 54.8	16.187
2	22 7 28.24	2.1239	16 6 42.3	13.251	2	23 46 57.60	2.0491	4 8 42.6	16.221
3	22 9 35.58	2.1208	15 53 24.6	13.339	3	23 49 0.56	2.0494	3 52 28.3	16.254
4	22 11 42.74	2.1178	15 40 1.6	13.427	4	23 51 3.54	2.0499	3 36 12.1	16.285
5	22 13 49.72	2.1148	15 26 33.4	13.513	5	23 53 6.56	2.0505	3 19 54.1	16.315
6	22 15 56.52	2.1118	15 13 0.0	13.599	6	23 55 9.61	2.0511	3 3 34.3	16.345
7	22 18 3.14	2.1090	14 59 21.5	13.683	7	23 57 12.70	2.0519	2 47 12.7	16.373
8	22 20 9.60	2.1062	14 45 38.1	13.765	8	23 59 15.84	2.0527	2 30 49.6	16.398
9	22 22 15.89	2.1034	14 31 49.7	13.847	9	0 1 19.02	2.0535	2 14 24.9	16.424
10	22 24 22.01	2.1007	14 17 56.4	13.928	10	0 3 22.26	2.0546	1 57 58.7	16.448
11	22 26 27.97	2.0981	14 3 58.3	14.008	11	0 5 25.57	2.0558	1 41 31.1	16.470
12	22 28 33.78	2.0955	13 49 55.4	14.087	12	0 7 28.95	2.0570	1 25 2.3	16.491
13	22 30 39.43	2.0929	13 35 47.9	14.164	13	0 9 32.40	2.0582	1 8 32.2	16.511
14	22 32 44.93	2.0904	13 21 35.7	14.241	14	0 11 35.93	2.0595	0 52 1.0	16.530
15	22 34 50.28	2.0880	13 7 19.0	14.316	15	0 13 39.54	2.0610	0 35 28.6	16.548
16	22 36 55.49	2.0857	12 52 57.8	14.390	16	0 15 43.25	2.0626	0 18 55.2	16.563
17	22 39 0.56	2.0834	12 38 32.2	14.463	17	0 17 47.05	2.0642	S. 0 2 21.0	16.578
18	22 41 5.50	2.0812	12 24 2.2	14.535	18	0 19 50.95	2.0659	N. 0 14 14.1	16.592
19	22 43 10.30	2.0790	12 9 28.0	14.606	19	0 21 54.96	2.0678	0 30 50.0	16.603
20	22 45 14.98	2.0769	11 54 49.5	14.676	20	0 23 59.09	2.0697	0 47 26.5	16.613
21	22 47 19.53	2.0748	11 40 6.9	14.744	21	0 26 3.33	2.0716	1 4 3.6	16.622
22	22 49 23.96	2.0729	11 25 20.2	14.812	22	0 28 7.69	2.0738	1 20 41.2	16.630
23	22 51 28.28	2.0710	11 10 29.5	14.878	23	0 30 12.19	2.0761	1 37 19.2	16.636
24	22 53 32.48	2.0692	S.10 55 34.9	14.943	24	0 32 16.82	2.0784	N. 1 53 57.5	16.641

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 32 16.82	2.0784	N. 1 53 57.5	16.641
1	0 34 21.59	2.0808	2 10 36.1	16.644
2	0 36 26.51	2.0833	2 27 14.8	16.646
3	0 38 31.58	2.0859	2 43 53.6	16.647
4	0 40 36.81	2.0886	3 0 32.4	16.646
5	0 42 42.21	2.0914	3 17 11.1	16.643
6	0 44 47.77	2.0942	3 33 49.6	16.639
7	0 46 53.51	2.0972	3 50 27.8	16.633
8	0 48 59.43	2.1003	4 7 5.6	16.627
9	0 51 5.54	2.1035	4 23 43.0	16.618
10	0 53 11.84	2.1067	4 40 19.8	16.608
11	0 55 18.34	2.1101	4 56 56.0	16.597
12	0 57 25.05	2.1135	5 13 31.4	16.583
13	0 59 31.96	2.1170	5 30 6.0	16.569
14	1 1 39.09	2.1207	5 46 39.7	16.553
15	1 3 46.44	2.1245	6 3 12.4	16.535
16	1 5 54.02	2.1283	6 19 43.9	16.515
17	1 8 1.83	2.1322	6 36 14.2	16.494
18	1 10 9.88	2.1362	6 52 43.2	16.471
19	1 12 18.17	2.1403	7 9 10.7	16.447
20	1 14 26.71	2.1446	7 25 36.8	16.422
21	1 16 35.51	2.1489	7 42 1.3	16.394
22	1 18 44.57	2.1533	7 58 24.1	16.365
23	1 20 53.90	2 1577	N. 8 14 45.1	16.334

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 23 3.49	2.1622	N. 8 31 4.2	16.302
1	1 25 13.36	2.1669	8 47 21.3	16.268
2	1 27 23.52	2.1716	9 3 36.3	16.232
3	1 29 33.96	2.1764	9 19 49.1	16.193
4	1 31 44.69	2.1814	9 35 59.5	16.153
5	1 33 55.73	2.1865	9 52 7.5	16.113
6	1 36 7.07	2.1915	10 8 13.0	16.070
7	1 38 18.71	2.1967	10 24 15.9	16.025
8	1 40 30.67	2.2020	10 40 16.0	15.978
9	1 42 42.95	2.2073	10 56 13.3	15.930
10	1 44 55.55	2.2127	11 12 7.6	15.879
11	1 47 8.48	2.2181	11 27 58.8	15.827
12	1 49 21.73	2.2236	11 43 46.8	15 773
13	1 51 35.32	2.2294	11 59 31.5	15.718
14	1 53 49.26	2.2352	12 15 12.9	15.661
15	1 56 3.54	2.2410	12 30 50.8	15.601
16	1 58 18.18	2.2469	12 46 25.0	15.539
17	2 0 33.17	2.2528	13 1 55.5	15.477
18	2 2 48.52	2.2589	13 17 22.2	15.411
19	2 5 4.24	2.2651	13 32 44.8	15.343
20	2 7 20.33	2.2712	13 48 3.4	15.275
21	2 9 36.78	2.2774	14 3 17.8	15.204
22	2 11 53.61	2.2838	14 18 27.9	15.131
23	2 14 10.83	2.2903	14 33 33.5	15.056
24	2 16 28.43	2.2966	N.14 48 34.6	14.979

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 16 28.43	2.2966	N.14 48 34.6	14.979
1	2 18 46.42	2.3031	15 3 31.0	14.900
2	2 21 4.80	2.3097	15 18 22.6	14.819
3	2 23 23.58	2.3164	15 33 9.3	14.736
4	2 25 42.76	2.3231	15 47 50.9	14.651
5	2 28 2.34	2.3298	16 2 27.4	14.565
6	2 30 22.32	2.3365	16 16 58.7	14.476
7	2 32 42.71	2.3434	16 31 24.6	14.385
8	2 35 3.52	2.3503	16 45 44.9	14.291
9	2 37 24.74	2.3572	16 59 59.5	14.196
10	2 39 46.38	2.3642	17 14 8.4	14.100
11	2 42 8.44	2.3712	17 28 11.5	14.001
12	2 44 30.92	2.3782	17 42 8.6	13.900
13	2 46 53.82	2.3853	17 55 59.5	13.796
14	2 49 17.15	2.3924	18 9 44.1	13.691
15	2 51 40.91	2.3995	18 23 22.4	13.584
16	2 54 5.10	2.4067	18 36 54.2	13.474
17	2 56 29.72	2.4139	18 50 19.3	13.363
18	2 58 54.77	2.4211	19 3 37.7	13.249
19	3 1 20.25	2.4283	19 16 49.2	13.133
20	3 3 46.17	2.4355	19 29 53.7	13.016
21	3 6 12.52	2.4427	19 42 51.1	12.896
22	3 8 39.31	2.4499	19 55 41.2	12.774
23	3 11 6.53	2.4571	N.20 8 24.0	12.651

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 13 34.18	2.4644	N.20 20 59.3	12.525
1	3 16 2.27	2.4717	20 33 27.0	12.397
2	3 18 30.79	2.4789	20 45 46.9	12.266
3	3 20 59.75	2.4861	20 57 58.9	12.134
4	3 23 29.14	2.4933	21 10 3.0	12.000
5	3 25 58.96	2.5005	21 21 58.9	11.863
6	3 28 29.21	2.5077	21 33 46.6	11.725
7	3 30 59.89	2.5149	21 45 25.9	11.585
8	3 33 31.00	2.5220	21 56 56.8	11.443
9	3 36 2.53	2.5291	22 8 19.1	11.298
10	3 38 34.49	2.5362	22 19 32.6	11.152
11	3 41 6.87	2.5432	22 30 37.3	11.004
12	3 43 39.67	2.5502	22 41 33.1	10.854
13	3 46 12.89	2.5570	22 52 19.8	10.702
14	3 48 46.51	2.5637	23 2 57.3	10.548
15	3 51 20.54	2.5705	23 13 25.5	10.392
16	3 53 54.98	2.5772	23 23 44.3	10.234
17	3 56 29.81	2.5838	23 33 53.6	10.075
18	3 59 5.04	2.5904	23 43 53.3	9.914
19	4 1 40.66	2.5969	23 53 43.3	9.751
20	4 4 16.67	2.6033	24 3 23.4	9.585
21	4 6 53.06	2.6096	24 12 53.4	9.417
22	4 9 29.83	2.6159	24 22 13.4	9.249
23	4 12 6.97	2.6220	24 31 23.3	9.079
24	4 14 44.47	2.6280	N.24 40 22.9	8.907

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 14 44.47	2.6280	N.24 40 22.9	8.907	0	6 24 58.43	2.7267	N.28 6 50.7	0.547
1	4 17 22.33	2.6339	24 49 12.1	8.733	1	6 27 41.95	2.7238	28 6 11.8	0.749
2	4 20 0.54	2.6397	24 57 50.9	8.558	2	6 30 25.29	2.7208	28 5 20.8	0.950
3	4 22 39.10	2.6455	25 6 19.1	8.381	3	6 33 8.45	2.7176	28 4 17.8	1.150
4	4 25 18.00	2.6511	25 14 36.6	8.203	4	6 35 51.41	2.7142	28 3 2.8	1.350
5	4 27 57.23	2.6565	25 22 43.4	8.023	5	6 38 34.16	2.7105	28 1 35.8	1.549
6	4 30 36.78	2.6618	25 30 39.4	7.842	6	6 41 16.68	2.7067	27 59 56.9	1.748
7	4 33 16.65	2.6670	25 38 24.4	7.659	7	6 43 58.97	2.7028	27 58 6.1	1.944
8	4 35 56.82	2.6720	25 45 58.4	7.474	8	6 46 41.02	2.6986	27 56 3.6	2.140
9	4 38 37.29	2.6769	25 53 21.3	7.288	9	6 49 22.81	2.6942	27 53 49.3	2.336
10	4 41 18.05	2.6818	26 0 33.0	7.101	10	6 52 4.33	2.6896	27 51 23.3	2.530
11	4 43 59.10	2.6865	26 7 33.4	6.912	11	6 54 45.57	2.6849	27 48 45.7	2.723
12	4 46 40.42	2.6909	26 14 22.4	6.722	12	6 57 26.52	2.6801	27 45 56.5	2.916
13	4 49 22.00	2.6952	26 21 0.0	6.531	13	7 0 7.18	2.6750	27 42 55.8	3.106
14	4 52 3.84	2.6994	26 27 26.1	6.339	14	7 2 47.52	2.6697	27 39 43.8	3.295
15	4 54 45.93	2.7034	26 33 40.7	6.147	15	7 5 27.54	2.6643	27 36 20.4	3.484
16	4 57 28.25	2.7072	26 39 43.7	5.953	16	7 8 7.23	2.6587	27 32 45.7	3.671
17	5 0 10.80	2.7108	26 45 35.0	5.757	17	7 10 46.58	2.6529	27 28 59.9	3.857
18	5 2 53.56	2.7143	26 51 14.5	5.560	18	7 13 25.58	2.6470	27 25 2.9	4.042
19	5 5 36.52	2.7176	26 56 42.2	5.363	19	7 16 4.22	2.6410	27 20 54.9	4.224
20	5 8 19.67	2.7207	27 1 58.0	5.164	20	7 18 42.50	2.6348	27 16 36.0	4.406
21	5 11 3.00	2.7237	27 7 1.9	4.965	21	7 21 20.40	2.6284	27 12 6.2	4.586
22	5 13 46.51	2.7265	27 11 53.8	4.765	22	7 23 57.91	2.6219	27 7 25.7	4.764
23	5 16 30.18	2.7290	N.27 16 33.7	4.565	23	7 26 35.03	2.6153	N.27 2 34.5	4.942
	TUESDAY 22.					THURSDAY 24.			
0	5 19 14.00	2.7314	N.27 21 1.6	4.363	0	7 29 11.75	2.6086	N.26 57 32.7	5.118
1	5 21 57.96	2.7336	27 25 17.3	4.161	1	7 31 48.06	2.6017	26 52 20.4	5.291
2	5 24 42.04	2.7355	27 29 20.9	3.958	2	7 34 23.95	2.5947	26 46 57.8	5.463
3	5 27 26.23	2.7372	27 33 12.3	3.755	3	7 36 59.42	2.5875	26 41 24.9	5.634
4	5 30 10.52	2.7388	27 36 51.5	3.552	4	7 39 34.45	2.5802	26 35 41.7	5.803
5	5 32 54.90	2.7402	27 40 18.5	3.348	5	7 42 9.05	2.5729	26 29 48.5	5.970
6	5 35 39.36	2.7415	27 43 33.2	3.143	6	7 44 43.20	2.5654	26 23 45.3	6.136
7	5 38 23.89	2.7425	27 46 35.6	2.938	7	7 47 16.90	2.5578	26 17 32.2	6.300
8	5 41 8.46	2.7432	27 49 25.7	2.733	8	7 49 50.14	2.5502	26 11 9.3	6.463
9	5 43 53.07	2.7438	27 52 3.5	2.527	9	7 52 22.93	2.5425	26 4 36.7	6.623
10	5 46 37.71	2.7441	27 54 28.9	2.321	10	7 54 55.25	2.5346	25 57 54.5	6.782
11	5 49 22.36	2.7442	27 56 42.0	2.116	11	7 57 27.09	2.5267	25 51 2.9	6.938
12	5 52 7.02	2.7442	27 58 42.8	1.910	12	7 59 58.46	2.5187	25 44 1.9	7.094
13	5 54 51.67	2.7440	28 0 31.2	1.704	13	8 2 29.34	2.5106	25 36 51.6	7.247
14	5 57 36.29	2.7435	28 2 7.2	1.498	14	8 4 59.74	2.5025	25 29 32.2	7.398
15	6 0 20.88	2.7428	28 3 30.9	1.292	15	8 7 29.65	2.4942	25 22 3.8	7.548
16	6 3 5.42	2.7419	28 4 42.3	1.086	16	8 9 59.06	2.4859	25 14 26.5	7.696
17	6 5 49.90	2.7408	28 5 41.3	0.881	17	8 12 27.97	2.4776	25 6 40.3	7.843
18	6 8 34.30	2.7394	28 6 28.0	0.676	18	8 14 56.38	2.4692	24 58 45.4	7.987
19	6 11 18.62	2.7377	28 7 2.4	0.471	19	8 17 24.28	2.4608	24 50 41.9	8.129
20	6 14 2.83	2.7359	28 7 24.5	0.267	20	8 19 51.68	2.4524	24 42 29.9	8.269
21	6 16 46.93	2.7339	28 7 34.4	+0.063	21	8 22 18.57	2.4439	24 34 9.6	8.408
22	6 19 30.90	2.7317	28 7 32.0	−0.141	22	8 24 44.95	2.4353	24 25 41.0	8.545
23	6 22 14.74	2.7293	28 7 17.4	0.344	23	8 27 10.81	2.4267	24 17 4.2	8.680
24	6 24 58.43	2.7267	N.28 6 50.7	0.547	24	8 29 36.15	2.4180	N.24 8 19.4	8.813

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 25.					SUNDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	8 29 36.15	2.4180	N.24 8 19.4	8.813	0	10 15 56.35	2.0287	N.15 6 44.4	13.103
1	8 32 0.97	2.4093	23 59 26.7	8.943	1	10 17 57.87	2.0220	14 53 36.7	13.153
2	8 34 25.27	2.4006	23 50 26.2	9.073	2	10 19 58.99	2.0153	14 40 26.0	13.203
3	8 36 49.05	2.3919	23 41 17.9	9.201	3	10 21 59.71	2.0087	14 27 12.3	13.253
4	8 39 12.31	2.3832	23 32 2.1	9.325	4	10 24 0.04	2.0023	14 13 55.7	13.300
5	8 41 35.04	2.3745	23 22 38.9	9.448	5	10 25 59.99	1.9959	14 0 36.3	13.346
6	8 43 57.25	2.3658	23 13 8.3	9.571	6	10 27 59.55	1.9895	13 47 14.2	13.390
7	8 46 18.94	2.3571	23 3 30.4	9.691	7	10 29 58.73	1.9833	13 33 49.5	13.433
8	8 48 40.10	2.3484	22 53 45.4	9.808	8	10 31 57.55	1.9772	13 20 22.3	13.473
9	8 51 0.74	2.3397	22 43 53.4	9.924	9	10 33 56.00	1.9711	13 6 52.7	13.514
10	8 53 20.86	2.3310	22 33 54.5	10.038	10	10 35 54.09	1.9652	12 53 20.6	13.554
11	8 55 40.46	2.3223	22 23 48.8	10.150	11	10 37 51.83	1.9593	12 39 46.2	13.592
12	8 57 59.53	2.3135	22 13 36.5	10.260	12	10 39 49.21	1.9534	12 26 9.6	13.628
13	9 0 18.08	2.3049	22 3 17.6	10.369	13	10 41 46.24	1.9477	12 12 30.8	13.664
14	9 2 36.12	2.2963	21 52 52.2	10.477	14	10 43 42.94	1.9421	11 58 49.9	13.699
15	9 4 53.64	2.2877	21 42 20.4	10.582	15	10 45 39.30	1.9365	11 45 6.9	13.733
16	9 7 10.64	2.2790	21 31 42.4	10.684	16	10 47 35.33	1.9310	11 31 21.9	13.766
17	9 9 27.12	2.2704	21 20 58.3	10.786	17	10 49 31.03	1.9256	11 17 35.0	13.797
18	9 11 43.09	2.2618	21 10 8.1	10.886	18	10 51 26.41	1.9204	11 3 46.3	13.827
19	9 13 58.54	2.2533	20 59 12.0	10.983	19	10 53 21.48	1.9152	10 49 55.8	13.856
20	9 16 13.49	2.2449	20 48 10.1	11.079	20	10 55 16.24	1.9100	10 36 3.6	13.884
21	9 18 27.93	2.2364	20 37 2.5	11.173	21	10 57 10.69	1.9049	10 22 9.7	13.911
22	9 20 41.86	2.2280	20 25 49.3	11.266	22	10 59 4.84	1.9000	10 8 14.3	13.937
23	9 22 55.29	2.2196	N.20 14 30.6	11.357	23	11 0 58.70	1.8952	N. 9 54 17.3	13.962
	SATURDAY 26.					MONDAY 28.			
0	9 25 8.21	2.2112	N.20 3 6.5	11.446	0	11 2 52.27	1.8904	N. 9 40 18.9	13.985
1	9 27 20.63	2.2029	19 51 37.1	11.533	1	11 4 45.55	1.8857	9 26 19.1	14.008
2	9 29 32.56	2.1947	19 40 2.5	11.618	2	11 6 38.56	1.8812	9 12 18.0	14.030
3	9 31 43.99	2.1865	19 28 22.9	11.703	3	11 8 31.30	1.8767	8 58 15.5	14.052
4	9 33 54.93	2.1783	19 16 38.2	11.786	4	11 10 23.77	1.8723	8 44 11.8	14.071
5	9 36 5.38	2.1702	19 4 48.6	11.866	5	11 12 15.98	1.8680	8 30 7.0	14.090
6	9 38 15.35	2.1621	18 52 54.3	11.944	6	11 14 7.93	1.8637	8 16 1.0	14.108
7	9 40 24.83	2.1541	18 40 55.3	12.022	7	11 15 59.62	1.8595	8 1 54.0	14.125
8	9 42 33.84	2.1463	18 28 51.7	12.098	8	11 17 51.07	1.8555	7 47 46.0	14.142
9	9 44 42.38	2.1385	18 16 43.6	12.172	9	11 19 42.28	1.8515	7 33 37.0	14.157
10	9 46 50.45	2.1307	18 4 31.1	12.245	10	11 21 33.25	1.8476	7 19 27.2	14.171
11	9 48 58.05	2.1229	17 52 14.3	12.317	11	11 23 23.99	1.8438	7 5 16.5	14.185
12	9 51 5.19	2.1152	17 39 53.1	12.386	12	11 25 14.51	1.8401	6 51 5.0	14.198
13	9 53 11.87	2.1076	17 27 27.9	12.453	13	11 27 4.80	1.8364	6 36 52.8	14.209
14	9 55 18.10	2.1001	17 14 58.7	12.519	14	11 28 54.88	1.8329	6 22 39.9	14.220
15	9 57 23.88	2.0926	17 2 25.6	12.584	15	11 30 44.75	1.8294	6 8 26.4	14.230
16	9 59 29.21	2.0852	16 49 48.6	12.648	16	11 32 34.41	1.8261	5 54 12.3	14.239
17	10 1 34.10	2.0779	16 37 7.8	12.710	17	11 34 23.88	1.8228	5 39 57.7	14.247
18	10 3 38.56	2.0707	16 24 23.4	12.770	18	11 36 13.15	1.8196	5 25 42.7	14.254
19	10 5 42.58	2.0634	16 11 35.4	12.829	19	11 38 2.23	1.8165	5 11 27.2	14.261
20	10 7 46.17	2.0563	15 58 43.9	12.888	20	11 39 51.13	1.8134	4 57 11.4	14.267
21	10 9 49.34	2.0493	15 45 48.9	12.944	21	11 41 39.84	1.8104	4 42 55.2	14.273
22	10 11 52.09	2.0424	15 32 50.6	12.998	22	11 43 28.38	1.8076	4 28 38.7	14.277
23	10 13 54.43	2.0355	15 19 49.1	13.052	23	11 45 16.76	1.8049	4 14 22.0	14.280
24	10 15 56.35	2.0287	N.15 6 44.4	13.103	24	11 47 4.97	1.8022	N. 4 0 5.1	14.283

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 47 4.97	1.8022	N. 4 0 5.1	14.283
1	11 48 53.02	1.7996	3 45 48.1	14.284
2	11 50 40.92	1.7971	3 31 31.0	14.286
3	11 52 28.67	1.7947	3 17 13.8	14.287
4	11 54 16.28	1.7924	3 2 56.6	14.286
5	11 56 3.75	1.7901	2 48 39.5	14.285
6	11 57 51.09	1.7879	2 34 22.4	14.284
7	11 59 38.30	1.7858	2 20 5.4	14.281
8	12 1 25.39	1.7838	2 5 48.7	14.277
9	12 3 12.36	1.7819	1 51 32.2	14.273
10	12 4 59.22	1.7802	1 37 15.9	14.268
11	12 6 45.98	1.7785	1 23 0.0	14.263
12	12 8 32.63	1.7768	1 8 44.4	14.257
13	12 10 19.19	1.7752	0 54 29.2	14.250
14	12 12 5.65	1.7736	0 40 14.4	14.243
15	12 13 52.02	1.7722	0 26 0.1	14.234
16	12 15 38.31	1.7709	N. 0 11 46.3	14.226
17	12 17 24.53	1.7697	S. 0 2 27.0	14.217
18	12 19 10.67	1.7684	0 16 39.7	14.206
19	12 20 56.74	1.7673	0 30 51.7	14.195
20	12 22 42.75	1.7664	0 45 3.1	14.184
21	12 24 28.71	1.7655	0 59 13.8	14.172
22	12 26 14.61	1.7647	1 13 23.7	14.159
23	12 28 0.47	1.7640	S. 1 27 32.8	14.145

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 29 46.28	1.7633	S. 1 41 41.1	14.131
1	12 31 32.06	1.7627	1 55 48.5	14.116
2	12 33 17.80	1.7621	2 9 55.0	14.101
3	12 35 3.51	1.7617	2 24 0.6	14.085
4	12 36 49.20	1.7614	2 38 5.2	14.068
5	12 38 34.87	1.7611	2 52 8.8	14.051
6	12 40 20.53	1.7609	3 6 11.3	14.033
7	12 42 6.18	1.7608	3 20 12.7	14.014
8	12 43 51.83	1.7607	3 34 12.9	13.995
9	12 45 37.47	1.7607	3 48 12.0	13.975
10	12 47 23.12	1.7609	4 2 9.9	13.954
11	12 49 8.78	1.7612	4 16 6.5	13.933
12	12 50 54.46	1.7615	4 30 1.8	13.911
13	12 52 40.15	1.7618	4 43 55.8	13.888
14	12 54 25.87	1.7623	4 57 48.4	13.865
15	12 56 11.62	1.7628	5 11 39.6	13.842
16	12 57 57.40	1.7634	5 25 29.4	13.817
17	12 59 43.22	1.7641	5 39 17.6	13.791
18	13 1 29.09	1.7648	5 53 4.3	13.766
19	13 3 15.00	1.7656	6 6 49.5	13.740
20	13 5 0.96	1.7665	6 20 33.1	13.713
21	13 6 46.98	1.7675	6 34 15.0	13.685
22	13 8 33.06	1.7686	6 47 55.3	13.657
23	13 10 19.21	1.7698	7 1 33.8	13.628
24	13 12 5.43	1.7710	S. 7 15 10.6	13.598

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 12 5.43	1.7710	S. 7 15 10.6	13.598
1	13 13 51.72	1.7722	7 28 45.6	13.568
2	13 15 38.09	1.7736	7 42 18.7	13.537
3	13 17 24.55	1.7750	7 55 50.0	13.506
4	13 19 11.09	1.7765	8 9 19.4	13.473
5	13 20 57.73	1.7782	8 22 46.8	13.440
6	13 22 44.47	1.7799	8 36 12.2	13.407
7	13 24 31.31	1.7816	8 49 35.6	13.373
8	13 26 18.26	1.7834	9 2 56.9	13.338
9	13 28 5.31	1.7852	9 16 16.1	13.303
10	13 29 52.48	1.7872	9 29 33.2	13.267
11	13 31 39.77	1.7892	9 42 48.1	13.230
12	13 33 27.18	1.7913	9 56 0.8	13.192
13	13 35 14.72	1.7935	10 9 11.1	13.153
14	13 37 2.40	1.7958	10 22 19.1	13.114
15	13 38 50.21	1.7980	10 35 24.8	13.076
16	13 40 38.16	1.8004	10 48 28.2	13.037
17	13 42 26.26	1.8029	11 1 29.2	12.996
18	13 44 14.51	1.8054	11 14 27.7	12.954
19	13 46 2.91	1.8080	11 27 23.6	12.911
20	13 47 51.47	1.8108	11 40 17.0	12.868
21	13 49 40.20	1.8136	11 53 7.8	12.824
22	13 51 29.09	1.8163	12 5 55.9	12.779
23	13 53 18.15	1.8191	S. 12 18 41.3	12.734

FRIDAY, JANUARY 1, 1875.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 55 7.38	1.8220	S. 12 31 24.0	12.689

PHASES OF THE MOON.

	d	h	m
● New Moon, . .	8	12	6.2
☽ First Quarter, . .	16	0	24.6
○ Full Moon, . . .	22	16	56.5
☾ Last Quarter, . .	30	2	36.0

	d	h
☾ Apogee, ...	4	12.5
☾ Perigee, ...	20	12.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Aldebaran	W.	99° 34′ 33″	3018	101° 4′ 24″	3028	102° 34′ 2″	3038	104° 3′ 28″	3048
	Pollux	W.	55 44 43	2965	57 15 40	2974	58 46 25	2984	60 16 58	2993
	Regulus	W.	19 27 45	3050	20 56 56	3048	22 26 9	3049	23 55 21	3050
	Mars	E.	30 6 0	3186	28 39 34	3197	27 13 21	3208	25 47 21	3218
	Spica	E.	35 6 31	2974	33 35 46	2985	32 5 15	2996	30 34 57	3006
	Jupiter	E.	36 29 27	3030	34 59 51	3039	33 30 27	3050	32 1 16	3059
	Sun	E.	81 49 27	3351	80 26 14	3361	79 3 13	3372	77 40 25	3382
2	Pollux	W.	67 47 5	3031	69 16 39	3038	70 46 5	3043	72 15 24	3049
	Regulus	W.	31 20 40	3066	32 49 31	3069	34 18 18	3073	35 47 1	3076
	Sun	E.	70 49 4	3425	69 27 16	3433	68 5 37	3439	66 44 5	3446
3	Pollux	W.	79 40 29	3069	81 9 16	3072	82 38 0	3075	84 6 40	3077
	Regulus	W.	43 9 41	3089	44 38 4	3091	46 6 25	3092	47 34 44	3094
	Sun	E.	59 58 0	3470	58 37 2	3474	57 16 9	3477	55 55 19	3480
4	Pollux	W.	91 29 33	3082	92 58 5	3082	94 26 37	3081	95 55 10	3080
	Regulus	W.	54 56 4	3095	56 24 20	3094	57 52 37	3093	59 20 55	3092
	Sun	E.	49 11 50	3488	47 51 13	3489	46 30 37	3489	45 10 1	3489
5	Pollux	W.	103 18 19	3071	104 47 4	3068	106 15 53	3065	107 44 45	3062
	Regulus	W.	66 42 55	3081	68 11 28	3078	69 40 4	3075	71 8 44	3071
	Sun	E.	38 26 57	3487	37 6 18	3486	35 45 38	3485	34 24 57	3483
10	Sun	W.	17 39 21	3306	19 3 26	3284	20 27 56	3265	21 52 49	3247
	Saturn	E.	35 17 12	2895	33 44 47	2890	32 12 15	2885	30 39 37	2881
	Fomalhaut	E.	57 20 36	3115	55 52 45	3118	54 24 57	3122	52 57 14	3126
	α Pegasi	E.	78 51 44	3180	77 25 11	3177	75 58 34	3173	74 31 53	3171
11	Sun	W.	29 1 57	3174	30 28 37	3162	31 55 32	3149	33 22 42	3136
	Fomalhaut	E.	45 40 50	3176	44 14 12	3193	42 47 54	3211	41 21 58	3229
	α Pegasi	E.	67 18 0	3169	65 51 14	3171	64 24 30	3173	62 57 49	3176
	α Arietis	E.	108 31 1	2827	106 57 8	2817	105 23 2	2808	103 48 44	2799
12	Sun	W.	40 41 53	3083	42 10 23	3073	43 39 6	3061	45 8 3	3052
	α Pegasi	E.	55 46 5	3216	54 20 15	3230	52 54 41	3244	51 29 24	3260
	α Arietis	E.	95 54 20	2754	94 18 52	2745	92 43 12	2737	91 7 21	2728
13	Sun	W.	52 35 59	2998	54 6 14	2988	55 36 42	2977	57 7 24	2966
	α Arietis	E.	83 5 7	2683	81 28 4	2675	79 50 50	2666	78 13 24	2657
	Aldebaran	E.	113 31 4	2692	111 54 13	2681	110 17 7	2670	108 39 47	2660
14	Sun	W.	64 44 17	2912	66 16 21	2901	67 48 39	2889	69 21 12	2878
	α Aquilæ	W.	42 28 16	5076	43 24 12	4908	44 22 20	4754	45 22 34	4615
	Saturn	W.	16 34 6	2702	18 10 43	2675	19 47 57	2650	21 25 44	2626
	α Arietis	E.	70 3 14	2612	68 24 36	2604	66 45 47	2596	65 6 46	2587
	Aldebaran	E.	100 29 33	2607	98 50 47	2596	97 11 47	2585	95 32 32	2575
15	Sun	W.	77 7 35	2820	78 41 37	2809	80 15 53	2798	81 50 24	2785
	α Aquilæ	W.	50 51 9	4071	52 1 39	3985	53 13 33	3908	54 26 45	3834
	Saturn	W.	29 41 27	2540	31 21 44	2526	33 2 21	2512	34 43 18	2498
	α Arietis	E.	56 48 48	2547	55 8 40	2539	53 28 21	2532	51 47 52	2525
	Aldebaran	E.	87 12 40	2522	85 31 58	2512	83 51 1	2502	82 9 50	2492
16	Sun	W.	89 46 53	2727	91 22 57	2715	92 59 17	2703	94 35 53	2692

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
1	Aldebaran	W.	105° 32′ 41″	3058	107° 1′ 42″	3067	108° 30′ 32″	3075	109° 59′ 12″	3082
	Pollux	W.	61 47 19	3001	63 17 30	3009	64 47 31	3017	66 17 23	3025
	Regulus	W.	25 24 32	3052	26 53 40	3056	28 22 44	3059	29 51 44	3062
	Mars	E.	24 21 33	3226	22 55 55	3235	21 30 27	3243	20 5 9	3252
	Spica	E.	29 4 52	3016	27 34 59	3026	26 5 19	3036	24 35 51	3045
	Jupiter	E.	30 32 16	3068	29 3 27	3076	27 34 48	3084	26 6 19	3092
	Sun	E.	76 17 48	3392	74 55 22	3400	73 33 6	3409	72 11 0	3418
2	Pollux	W.	73 44 36	3054	75 13 42	3058	76 42 43	3063	78 11 38	3066
	Regulus	W.	37 15 40	3078	38 44 16	3082	40 12 48	3085	41 41 16	3087
	Sun	E.	65 22 40	3452	64 1 22	3456	62 40 9	3462	61 19 2	3466
3	Pollux	W.	85 35 18	3078	87 3 54	3080	88 32 28	3081	90 1 1	3082
	Regulus	W.	49 3 1	3095	50 31 17	3095	51 59 33	3096	53 27 48	3095
	Sun	E.	54 34 33	3482	53 13 49	3485	51 53 8	3486	50 32 28	3488
4	Pollux	W.	97 23 44	3078	98 52 20	3078	100 20 57	3075	101 49 37	3073
	Regulus	W.	60 49 14	3091	62 17 35	3088	63 45 59	3086	65 14 26	3084
	Sun	E.	43 49 25	3489	42 28 49	3488	41 8 12	3488	39 47 35	3488
5	Pollux	W.	109 13 41	3059	110 42 41	3055	112 11 46	3052	113 40 55	3047
	Regulus	W.	72 37 29	3068	74 6 18	3065	75 35 11	3060	77 4 10	3056
	Sun	E.	33 4 14	3482	31 43 30	3480	30 22 44	3480	29 1 57	3480
10	Sun	W.	23 18 2	3231	24 43 34	3215	26 9 25	3201	27 35 33	3188
	Saturn	E.	29 6 54	2878	27 34 7	2876	26 1 17	2873	24 28 24	2872
	Fomalhaut	E.	51 29 38	3134	50 2 10	3142	48 34 51	3152	47 7 44	3163
	α Pegasi	E.	73 5 9	3169	71 38 23	3168	70 11 36	3168	68 44 48	3168
11	Sun	W.	34 50 5	3127	36 17 42	3116	37 45 32	3105	39 13 36	3094
	Fomalhaut	E.	39 56 27	3258	38 31 26	3288	37 7 1	3324	35 43 17	3365
	α Pegasi	E.	61 31 13	3183	60 4 43	3189	58 38 21	3197	57 12 8	3205
	α Arietis	E.	102 14 15	2790	100 39 34	2781	99 4 41	2772	97 29 36	2763
12	Sun	W.	46 37 12	3041	48 6 34	3030	49 36 9	3020	51 5 57	3009
	α Pegasi	E.	50 4 26	3280	48 39 51	3303	47 15 43	3329	45 52 5	3358
	α Arietis	E.	89 31 18	2719	87 55 3	2710	86 18 36	2701	84 41 58	2692
13	Sun	W.	58 38 19	2955	60 9 28	2944	61 40 51	2934	63 12 27	2923
	α Arietis	E.	76 35 46	2648	74 57 56	2639	73 19 54	2630	71 41 40	2621
	Aldebaran	E.	107 2 13	2649	105 24 25	2638	103 46 22	2628	102 8 5	2617
14	Sun	W.	70 53 59	2866	72 27 1	2855	74 0 17	2843	75 33 49	2832
	α Aquilæ	W.	46 24 46	4486	47 28 50	4369	48 34 39	4262	49 42 7	4162
	Saturn	W.	23 4 1	2607	24 42 46	2588	26 21 57	2572	28 1 31	2556
	α Arietis	E.	63 27 33	2579	61 48 9	2570	60 8 33	2562	58 28 46	2554
	Aldebaran	E.	93 53 3	2564	92 13 19	2554	90 33 21	2543	88 53 8	2533
15	Sun	W.	83 25 11	2774	85 0 13	2762	86 35 31	2750	88 11 4	2738
	α Aquilæ	W.	55 41 12	3767	56 56 49	3704	58 13 32	3646	59 31 17	3590
	Saturn	W.	36 24 34	2485	38 6 8	2472	39 48 1	2459	41 30 12	2446
	α Arietis	E.	50 7 14	2519	48 26 27	2513	46 45 32	2508	45 4 30	2504
	Aldebaran	E.	80 28 25	2481	78 46 45	2471	77 4 51	2461	75 22 43	2450
16	Sun	W.	96 12 44	2680	97 49 51	2669	99 27 13	2657	101 4 50	2646

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
16	α Aquilæ	W.	60° 50′ 2″	3539	62° 9′ 43″	3491	63° 30′ 17″	3446	64° 51′ 41″	3405
	Saturn	W.	43 12 41	2433	44 55 28	2422	46 38 32	2410	48 21 53	2398
	Fomalhaut	W.	28 24 5	3361	29 47 6	3253	31 12 12	3158	32 39 12	3073
	α Arietis	E.	43 23 22	2500	41 42 9	2497	40 0 52	2495	38 19 32	2496
	Aldebaran	E.	73 40 20	2441	71 57 43	2431	70 14 52	2421	68 31 47	2412
17	Sun	W.	102 42 43	2635	104 20 51	2624	105 59 13	2613	107 37 50	2602
	α Aquilæ	W.	71 49 38	3233	73 15 8	3205	74 41 11	3178	76 7 46	3155
	Saturn	W.	57 2 52	2339	58 47 54	2329	60 33 11	2318	62 18 44	2307
	Fomalhaut	W.	40 16 26	2778	41 51 28	2735	43 27 17	2696	45 4 2	2660
	Aldebaran	E.	59 53 9	2368	58 8 49	2361	56 24 18	2354	54 39 37	2347
	Pollux	E.	103 24 38	2298	101 38 35	2287	99 52 16	2277	98 5 42	2266
18	Sun	W.	115 54 29	2553	117 34 29	2543	119 14 42	2535	120 55 7	2527
	α Aquilæ	W.	83 27 11	3060	84 56 9	3047	86 25 24	3034	87 54 54	3025
	Saturn	W.	71 10 19	2258	72 57 21	2248	74 44 37	2239	76 32 7	2231
	Fomalhaut	W.	53 18 37	2520	54 59 22	2499	56 40 37	2478	58 22 21	2459
	α Pegasi	W.	35 52 16	3325	37 15 58	3226	38 41 36	3140	40 8 57	3064
	Aldebaran	E.	45 54 4	2324	44 8 39	2322	42 23 12	2322	40 37 44	2323
	Pollux	E.	89 9 10	2218	87 21 9	2209	85 32 55	2200	83 44 28	2192
19	α Aquilæ	W.	95 24 53	2999	96 55 7	2999	98 25 21	3001	99 55 33	3005
	Saturn	W.	85 32 36	2192	87 21 15	2186	89 10 3	2180	90 59 0	2175
	Fomalhaut	W.	66 57 9	2382	68 41 9	2371	70 25 26	2360	72 9 58	2350
	α Pegasi	W.	47 46 24	2785	49 21 12	2744	50 56 53	2708	52 33 22	2676
	Pollux	E.	74 39 13	2155	72 49 38	2149	70 59 53	2143	69 9 59	2137
	Regulus	E.	111 15 28	2164	109 26 6	2157	107 36 34	2151	105 46 53	2146
20	Saturn	W.	100 5 34	2155	101 55 9	2153	103 44 48	2151	105 34 30	2150
	Fomalhaut	W.	80 55 48	2315	82 41 26	2311	84 27 10	2308	86 12 58	2306
	α Pegasi	W.	60 45 28	2554	62 25 26	2538	64 5 47	2522	65 46 29	2509
	Pollux	E.	59 58 41	2117	58 8 8	2115	56 17 32	2113	54 26 53	2112
	Regulus	E.	96 36 34	2125	94 46 13	2122	92 55 48	2120	91 5 20	2118
21	Fomalhaut	W.	95 2 20	2309	96 48 7	2312	98 33 49	2317	100 19 24	2323
	α Pegasi	W.	74 13 52	2467	75 55 51	2464	77 37 55	2461	79 20 3	2460
	α Arietis	W.	30 46 26	2309	32 32 12	2292	34 18 23	2279	36 4 53	2268
	Pollux	E.	45 13 26	2115	43 22 49	2116	41 32 15	2119	39 41 45	2123
	Regulus	E.	81 52 42	2120	80 2 14	2122	78 11 49	2125	76 21 28	2128
22	α Pegasi	W.	87 50 25	2475	89 32 14	2482	91 13 53	2489	92 55 21	2498
	α Arietis	W.	45 0 13	2247	46 47 30	2248	48 34 46	2250	50 21 59	2253
	Pollux	E.	30 31 0	2151	28 41 19	2159	26 51 49	2167	25 2 32	2176
	Regulus	E.	67 11 20	2155	65 21 45	2162	63 32 20	2170	61 43 7	2178
23	α Arietis	W.	59 16 20	2285	61 2 41	2294	62 48 50	2303	64 34 45	2313
	Aldebaran	W.	29 17 37	2433	31 0 25	2423	32 43 27	2417	34 26 38	2414
	Regulus	E.	52 40 28	2229	50 52 44	2241	49 5 18	2254	47 18 11	2267
	Spica	E.	106 40 38	2218	104 52 37	2229	103 4 53	2241	101 17 27	2253
	Jupiter	E.	111 43 25	2260	109 56 26	2271	108 9 44	2283	106 23 20	2295
	Mars	E.	114 59 48	2400	113 16 13	2412	111 32 56	2424	109 49 56	2437
24	α Arietis	W.	73 20 17	2374	75 4 29	2388	76 48 21	2402	78 31 53	2416
	Aldebaran	W.	43 2 36	2429	44 45 29	2438	46 28 10	2447	48 10 38	2457
	Regulus	E.	38 27 43	2342	36 42 44	2359	34 58 10	2376	33 14 1	2394

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
16	α Aquilæ	W.	66° 13′ 52″	3365	67° 36′ 48″	3329	69° 0′ 26″	3295	70° 24′ 43″	3263
	Saturn	W.	50 5 31	2386	51 49 26	2374	53 33 38	2362	55 18 7	2351
	Fomalhaut	W.	34 7 54	3000	35 38 7	2935	37 9 41	2876	38 42 30	2825
	α Arietis	E.	36 38 13	2497	34 56 56	2501	33 15 44	2507	31 34 41	2517
	Aldebaran	E.	66 48 29	2403	65 4 58	2394	63 21 14	2385	61 37 18	2376
17	Sun	W.	109 16 42	2592	110 55 48	2582	112 35 8	2572	114 14 42	2562
	α Aquilæ	W.	77 34 49	3133	79 2 19	3112	80 30 14	3093	81 58 32	3076
	Saturn	W.	64 4 33	2296	65 50 38	2287	67 36 57	2277	69 23 31	2267
	Fomalhaut	W.	46 41 35	2628	48 19 52	2598	49 58 50	2570	51 38 26	2545
	Aldebaran	E.	52 54 46	2341	51 9 46	2335	49 24 38	2331	47 39 24	2327
	Pollux	E.	96 18 53	2256	94 31 49	2246	92 44 30	2237	90 56 57	2227
18	Sun	W.	122 35 43	2519	124 16 30	2511	125 57 28	2504	127 38 36	2497
	α Aquilæ	W.	89 24 36	3016	90 54 29	3009	92 24 31	3003	93 54 40	3000
	Saturn	W.	78 19 49	2223	80 7 43	2214	81 55 49	2206	83 44 7	2199
	Fomalhaut	W.	60 4 32	2441	61 47 8	2425	63 30 7	2410	65 13 28	2396
	α Pegasi	W.	41 37 51	2995	43 8 10	2933	44 39 47	2878	46 12 34	2829
	Aldebaran	E.	38 52 18	2326	37 6 56	2330	35 21 40	2337	33 36 35	2348
	Pollux	E.	81 55 48	2184	80 6 56	2176	78 17 53	2169	76 28 38	2162
19	α Aquilæ	W.	101 25 40	3011	102 55 39	3020	104 25 27	3030	105 55 2	3044
	Saturn	W.	92 48 5	2170	94 37 18	2165	96 26 38	2161	98 16 4	2159
	Fomalhaut	W.	73 54 45	2341	75 39 45	2333	77 24 56	2326	79 10 18	2320
	α Pegasi	W.	54 10 34	2646	55 48 26	2619	57 26 55	2595	59 5 57	2574
	Pollux	E.	67 19 57	2132	65 29 47	2128	63 39 31	2124	61 49 9	2120
	Regulus	E.	103 57 4	2141	102 7 7	2136	100 17 2	2132	98 26 51	2128
20	Saturn	W.	107 24 13	2149	109 13 57	2149	111 3 41	2149	112 53 25	2151
	Fomalhaut	W.	87 58 49	2304	89 44 42	2304	91 30 36	2304	93 16 29	2306
	α Pegasi	W.	67 27 30	2497	69 8 47	2487	70 50 18	2480	72 32 0	2472
	Pollux	E.	52 36 12	2111	50 45 30	2111	48 54 48	2111	47 4 6	2113
	Regulus	E.	89 14 49	2118	87 24 17	2118	85 33 45	2118	83 43 13	2118
21	Fomalhaut	W.	102 4 50	2330	103 50 6	2337	105 35 11	2346	107 20 4	2355
	α Pegasi	W.	81 2 12	2460	82 44 21	2462	84 26 27	2465	86 8 29	2470
	α Arietis	W.	37 51 39	2260	39 38 37	2254	41 25 44	2250	43 12 57	2248
	Pollux	E.	37 51 21	2127	36 1 3	2132	34 10 53	2138	32 20 52	2144
	Regulus	E.	74 31 12	2132	72 41 2	2137	70 51 0	2142	69 1 5	2149
22	α Pegasi	W.	94 36 37	2508	96 17 39	2520	97 58 25	2533	99 38 53	2546
	α Arietis	W.	52 9 7	2258	53 56 9	2263	55 43 3	2270	57 29 47	2277
	Pollux	E.	23 13 29	2187	21 24 42	2198	19 36 12	2210	17 48 0	2225
	Regulus	E.	59 54 6	2187	58 5 19	2196	56 16 46	2207	54 28 29	2218
23	α Arietis	W.	66 20 25	2324	68 5 49	2336	69 50 56	2348	71 35 46	2361
	Aldebaran	W.	36 9 53	2413	37 53 9	2414	39 36 24	2417	41 19 34	2423
	Regulus	E.	45 31 23	2281	43 44 55	2296	41 58 49	2311	40 13 5	2326
	Spica	E.	99 30 18	2266	97 43 28	2279	95 56 58	2292	94 10 47	2306
	Jupiter	E.	104 37 13	2308	102 51 25	2321	101 5 56	2334	99 20 46	2348
	Mars	E.	108 7 14	2450	106 24 50	2464	104 42 46	2478	103 1 2	2492
24	α Arietis	W.	80 15 5	2431	81 57 55	2447	83 40 23	2463	85 22 28	2479
	Aldebaran	W.	49 52 52	2468	51 34 50	2480	53 16 32	2492	54 57 57	2505
	Regulus	E.	31 30 18	2413	29 47 2	2433	28 4 15	2454	26 21 57	2476

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Spica	E.	92° 24′ 56″	2320	90° 39′ 26″	2335	88° 54′ 18″	2350	87° 9′ 31″	2366
	Jupiter	E.	97 35 57	2363	95 51 29	2376	94 7 22	2393	92 23 37	2408
	Mars	E.	101 19 38	2507	99 38 35	2522	97 57 53	2538	96 17 33	2555
25	α Arietis	W.	87 4 11	2495	88 45 31	2512	90 26 27	2529	92 7 0	2546
	Aldebaran	W.	56 39 3	2519	58 19 50	2533	60 0 18	2547	61 40 26	2562
	Spica	E.	78 31 18	2447	76 48 50	2463	75 6 45	2580	73 25 4	2497
	Jupiter	E.	83 50 27	2489	82 8 59	2507	80 27 55	2523	78 47 14	2540
	Mars	E.	88 1 34	2638	86 23 31	2656	84 45 52	2675	83 8 38	2692
26	Aldebaran	W.	69 55 52	2640	71 33 53	2656	73 11 32	2672	74 48 49	2689
	Pollux	W.	25 47 44	2588	27 26 55	2605	29 5 43	2621	30 44 9	2638
	Spica	E.	65 2 36	2584	63 23 19	2601	61 44 25	2618	60 5 55	2636
	Jupiter	E.	70 29 46	2627	68 51 28	2644	67 13 33	2662	65 36 2	2680
	Mars	E.	75 8 24	2782	73 33 33	2800	71 59 5	2818	70 25 1	2837
	Antares	E.	110 55 37	2581	109 16 16	2598	107 37 18	2615	105 58 43	2632
	Venus	E.	111 44 50	2577	110 5 23	2595	108 26 21	2613	106 47 44	2632
27	Aldebaran	W.	82 49 47	2770	84 24 54	2786	85 59 40	2801	87 34 6	2818
	Pollux	W.	38 50 44	2719	40 26 58	2736	42 2 50	2752	43 38 21	2767
	Spica	E.	51 59 14	2720	50 23 1	2738	48 47 11	2753	47 11 42	2770
	Jupiter	E.	57 34 13	2764	55 58 58	2781	54 24 5	2797	52 49 33	2813
	Mars	E.	62 40 29	2925	61 8 42	2942	59 37 17	2960	58 6 14	2977
	Antares	E.	97 51 35	2716	96 15 17	2732	94 39 20	2749	93 3 45	2764
	Venus	E.	98 40 55	2724	97 4 47	2741	95 29 2	2760	93 53 41	2777
	Sun	E.	125 5 50	3098	123 37 38	3114	122 9 46	3131	120 42 14	3148
28	Aldebaran	W.	95 21 11	2894	96 53 38	2909	98 25 46	2923	99 57 36	2936
	Pollux	W.	51 30 56	2842	53 4 29	2856	54 37 44	2869	56 10 42	2883
	Spica	E.	39 19 31	2847	37 46 4	2862	36 12 56	2876	34 40 7	2891
	Jupiter	E.	45 2 2	2891	43 29 31	2905	41 57 18	2918	40 25 22	2931
	Mars	E.	50 36 5	3056	49 7 1	3071	47 38 16	3087	46 9 50	3101
	Antares	E.	85 10 54	2840	83 37 18	2854	82 4 0	2868	80 31 0	2881
	Venus	E.	86 2 39	2863	84 29 33	2880	82 56 48	2895	81 24 23	2912
	Sun	E.	113 29 33	3229	112 3 58	3243	110 38 40	3259	109 13 40	3272
29	Pollux	W.	63 51 25	2944	65 22 48	2955	66 53 57	2965	68 24 53	2976
	Regulus	W.	27 24 37	2983	28 55 11	2990	30 25 36	2997	31 55 52	3005
	Jupiter	E.	32 49 55	2996	31 19 37	3007	29 49 33	3018	28 19 43	3030
	Mars	E.	38 51 54	3168	37 25 6	3180	35 58 33	3192	34 32 14	3203
	Antares	E.	72 50 7	2943	71 18 43	2954	69 47 32	2964	68 16 34	2974
	Venus	E.	73 47 16	2986	72 16 46	3001	70 46 34	3014	69 16 39	3027
	Sun	E.	102 12 40	3338	100 49 13	3351	99 26 0	3362	98 3 0	3373
30	Pollux	W.	75 56 34	3019	77 26 23	3026	78 56 3	3034	80 25 34	3040
	Regulus	W.	39 24 55	3039	40 54 19	3046	42 23 35	3052	43 52 44	3056
	Antares	E.	60 44 46	3018	59 14 56	3026	57 45 15	3033	56 15 43	3039
	Venus	E.	61 51 1	3089	60 22 38	3100	58 54 28	3111	57 26 32	3122
	Sun	E.	91 10 59	3421	89 49 6	3430	88 27 23	3437	87 5 48	3444
31	Pollux	W.	87 51 23	3065	89 20 16	3068	90 49 5	3071	92 17 50	3073
	Regulus	W.	51 17 1	3078	52 45 38	3080	54 14 12	3082	55 42 43	3085
	Antares	E.	48 49 49	3064	47 20 55	3068	45 52 6	3071	44 23 21	3073
	Venus	E.	50 9 58	3171	48 43 14	3181	47 16 42	3190	45 50 21	3198
	Sun	E.	80 19 40	3471	78 58 44	3475	77 37 52	3479	76 17 4	3482

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	Spica	E.	85° 25′ 7″	2381	83° 41′ 5″	2397	81° 57′ 26″	2413	80° 14′ 10″	2430
	Jupiter	E.	90 40 13	2424	88 57 12	2440	87 14 34	2456	85 32 19	2472
	Mars	E.	94 37 36	2571	92 58 1	2588	91 18 49	2604	89 40 0	2621
25	α Arietis	W.	93 47 9	2563	95 26 55	2580	97 6 17	2599	98 45 14	2617
	Aldebaran	W.	63 20 13	2577	64 59 40	2592	66 38 46	2608	68 17 30	2624
	Spica	E.	71 43 46	2514	70 2 52	2531	68 22 22	2549	66 42 17	2566
	Jupiter	E.	77 6 57	2558	75 27 4	2574	73 47 34	2592	72 8 28	2610
	Mars	F.	81 31 48	2710	79 55 21	2728	78 19 18	2746	76 43 39	2764
26	Aldebaran	W.	76 25 44	2705	78 2 17	2721	79 38 29	2738	81 14 19	2754
	Pollux	W.	32 22 12	2655	33 59 53	2671	35 37 12	2687	37 14 9	2704
	Spica	E.	58 27 49	2653	56 50 6	2670	55 12 46	2687	53 35 49	2704
	Jupiter	E.	63 58 55	2697	62 22 11	2713	60 45 49	2731	59 9 50	2747
	Mars	E.	68 51 21	2855	67 18 4	2873	65 45 10	2890	64 12 38	2908
	Antares	E.	104 20 31	2649	102 42 43	2666	101 5 18	2683	99 28 15	2700
	Venus	E.	105 9 33	2651	103 31 47	2669	101 54 25	2687	100 17 28	2705
27	Aldebaran	W.	89 8 11	2834	90 41 55	2848	92 15 20	2864	93 48 25	2879
	Pollux	W.	45 13 32	2783	46 48 22	2798	48 22 53	2813	49 57 4	2828
	Spica	E.	45 36 35	2786	44 1 49	2801	42 27 23	2817	40 53 17	2832
	Jupiter	E.	51 15 22	2829	49 41 32	2845	48 8 2	2860	46 34 52	2876
	Mars	E.	56 35 32	2993	55 5 11	3009	53 35 10	3025	52 5 28	3040
	Antares	E.	91 28 30	2780	89 53 36	2796	88 19 3	2811	86 44 49	2825
	Venus	E.	92 18 43	2795	90 44 8	2812	89 9 56	2829	87 36 6	2847
	Sun	E.	119 15 3	3165	117 48 12	3181	116 21 40	3197	114 55 27	3213
28	Aldebaran	W.	101 29 9	2950	103 0 25	2963	104 31 24	2977	106 2 6	2990
	Pollux	W.	57 43 23	2896	59 15 47	2909	60 47 55	2920	62 19 48	2933
	Spica	E.	33 7 36	2905	31 35 23	2918	30 3 27	2931	28 31 48	2945
	Jupiter	E.	38 53 43	2946	37 22 22	2958	35 51 17	2971	34 20 28	2984
	Mars	E.	44 41 42	3115	43 13 51	3129	41 46 16	3142	40 18 57	3155
	Antares	E.	78 58 17	2894	77 25 51	2907	75 53 41	2919	74 21 46	2931
	Venus	E.	79 52 19	2927	78 20 35	2942	76 49 10	2958	75 18 4	2972
	Sun	E.	107 48 56	3287	106 24 29	3300	105 0 17	3313	103 36 21	3326
29	Pollux	W.	69 55 36	2985	71 26 7	2994	72 56 27	3003	74 26 36	3012
	Regulus	W.	33 25 58	3013	34 55 55	3019	36 25 44	3026	37 55 24	3034
	Jupiter	E.	26 50 7	3041	25 20 45	3051	23 51 35	3061	22 22 38	3071
	Mars	E.	33 6 8	3214	31 40 15	3225	30 14 35	3236	28 49 8	3247
	Antares	E.	66 45 49	2985	65 15 17	2993	63 44 56	3002	62 14 46	3010
	Venus	E.	67 47 0	3040	66 17 37	3053	64 48 30	3065	63 19 38	3078
	Sun	E.	96 40 13	3384	95 17 38	3393	93 55 14	3403	92 33 1	3413
30	Pollux	W.	81 54 57	3046	83 24 13	3052	84 53 22	3056	86 22 25	3060
	Regulus	W.	45 21 47	3062	46 50 43	3066	48 19 34	3070	49 48 20	3074
	Antares	E.	54 46 19	3045	53 17 2	3051	51 47 52	3056	50 18 48	3060
	Venus	E.	55 58 49	3133	54 31 19	3143	53 4 1	3152	51 36 54	3161
	Sun	E.	85 44 21	3450	84 23 1	3456	83 1 48	3462	81 40 41	3467
31	Pollux	W.	93 46 32	3075	95 15 12	3077	96 43 50	3078	98 12 26	3078
	Regulus	W.	57 11 11	3087	58 39 37	3087	60 8 2	3088	61 36 26	3088
	Antares	E.	42 54 38	3075	41 25 58	3077	39 57 20	3078	38 28 43	3078
	Venus	E.	44 24 10	3208	42 58 10	3217	41 32 21	3227	40 6 44	3236
	Sun	E.	74 56 20	3484	73 35 38	3486	72 14 58	3488	70 54 20	3488

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	17 52 16.75	13.676	−23 19 21.2	− 8.74	23 9.9
2	17 57 45.08	13.687	23 22 29.1	6.93	23 11.4
3	18 3 13.65	13.694	23 24 54.0	5.14	23 13.0
4	18 8 42.40	13.699	23 26 35.6	3.33	23 14.5
5	18 14 11.26	13.702	23 27 33.9	− 1.52	23 16.1
6	18 19 40.18	13.704	23 27 48.7	+ 0.29	23 17.6
7	18 25 9.09	13.703	23 27 19.8	2.10	23 19.1
8	18 30 37.93	13.699	23 26 7.4	3.92	23 20.7
9	18 36 6.64	13.693	23 24 11.5	5.73	23 22.2
10	18 41 35.18	13.684	23 21 32.2	7.54	23 23.7
11	18 47 3.47	13.672	23 18 9.3	9.35	23 25.2
12	18 52 31.44	13.658	23 14 3.2	11.15	23 26.8
13	18 57 59.02	13.641	23 9 14.0	12.94	23 28.3
14	19 3 26.20	13.622	23 3 41.9	14.73	23 29.8
15	19 8 52.89	13.601	22 57 27.1	16.51	23 31.3
16	19 14 19.02	13.576	22 50 29.9	18.27	23 32.8
17	19 19 44.54	13.550	22 42 50.6	20.01	23 34.2
18	19 25 9.39	13.520	22 34 29.6	21.74	23 35.7
19	19 30 33.52	13.490	22 25 27.1	23.46	23 37.2
20	19 35 56.90	13.456	22 15 43.5	25.17	23 38.6
21	19 41 19.46	13.422	22 5 19.2	26.86	23 40.0
22	19 46 41.17	13.386	21 54 14.6	28.52	23 41.4
23	19 52 1.98	13.347	21 42 30.2	30.17	23 42.8
24	19 57 21.83	13.306	21 30 6.7	31.79	23 44.2
25	20 2 40.69	13.265	21 17 4.3	33.39	23 45.5
26	20 7 58.55	13.222	21 3 23.9	34.97	23 46.9
27	20 13 15.35	13.177	20 49 5.8	36.53	23 48.2
28	20 18 31.05	13.131	20 34 10.7	38.07	23 49.5
29	20 23 45.65	13.084	20 18 39.1	39.57	23 50.8
30	20 28 59.13	13.038	20 2 31.5	41.05	23 52.0
31	20 34 11.47	12.991	19 45 48.7	42.51	23 53.3
32	20 39 22.64	12.941	−19 28 31.3	+43.94	23 54.5

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	5″.2	5″.2	5″.1	5″.1	5″.1	5″.0	5″.0
Hor. Parallax	5.3	5.3	5.3	5.2	5.2	5.2	5.2

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 39 22.64	12.941	−19 28 31.3	+43.94	23 54.5
2	20 44 32.64	12.891	19 10 39.8	45.34	23 55.7
3	20 49 41.45	12.841	18 52 15.0	46.72	23 56.9
4	20 54 49.04	12.791	18 33 17.6	48.06	23 58.1
5	20 59 55.43	12.741	18 13 48.2	49.38	23 59.2
6	21 5 0.60	12.691	17 53 47.6	50.67	
7	21 10 4.57	12.640	17 33 16.4	51.92	0 0.3
8	21 15 7.32	12.589	17 12 15.4	53.15	0 1.4
9	21 20 8.85	12.539	16 50 45.3	54.35	0 2.5
10	21 25 9.17	12.488	16 28 46.8	55.52	0 3.6
11	21 30 8.28	12.438	16 6 20.6	56.66	0 4.6
12	21 35 6.20	12.389	15 43 27.4	57.76	0 5.6
13	21 40 2.93	12.339	15 20 8.1	58.84	0 6.6
14	21 44 58.47	12.290	14 56 23.3	59.88	0 7.6
15	21 49 52.83	12.241	14 32 14.0	60.89	0 8.6
16	21 54 46.03	12.193	14 7 40.8	61.87	0 9.5
17	21 59 38.11	12.146	13 42 44.5	62.82	0 10.5
18	22 4 29.06	12.099	13 17 26.0	63.73	0 11.4
19	22 9 18.89	12.053	12 51 45.9	64.61	0 12.3
20	22 14 7.64	12.009	12 25 45.1	65.46	0 13.1
21	22 18 55.32	11.965	11 59 24.3	66.27	0 14.0
22	22 23 41.98	11.923	11 32 44.3	67.06	0 14.8
23	22 28 27.63	11.882	11 5 45.8	67.81	0 15.6
24	22 33 12.29	11.841	10 38 29.8	68.53	0 16.4
25	22 37 56.01	11.802	10 10 56.9	69.21	0 17.2
26	22 42 38.79	11.764	9 43 7.9	69.87	0 18.0
27	22 47 20.70	11.728	9 15 3.6	70.49	0 18.8
28	22 52 1.75	11.693	8 46 44.8	71.08	0 19.5
29	22 56 41.99	11.660	8 18 12.1	71.64	0 20.2
30	23 1 21.44	11.628	7 49 26.3	72.17	0 20.9
31	23 6 0.15	11.598	7 20 28.2	72.67	0 21.6
32	23 10 38.16	11.570	− 6 51 18.4	+73.14	0 22.3

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	5″.0	5″.0	5″.0	5″.0	5″.0	5″.0
Hor. Parallax	5.2	5.2	5.2	5.2	5.1	5.2

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 56 41.99	11.660	−8 18 12.1	+71.64	0 20.2
2	23 1 21.44	11.628	7 49 26.3	72.17	0 20.9
3	23 6 0.15	11.598	7 20 28.2	72.67	0 21.6
4	23 10 38.16	11.570	6 51 18.4	73.14	0 22.3
5	23 15 15.50	11.543	6 21 57.7	73.58	0 23.0
6	23 19 52.23	11.518	5 52 26.9	73.98	0 23.7
7	23 24 28.38	11.495	5 22 46.6	74.36	0 24.4
8	23 29 3.98	11.473	4 52 57.8	74.71	0 25.0
9	23 33 39.09	11.452	4 23 0.9	75.02	0 25.6
10	23 38 13.71	11.434	3 52 57.0	75.30	0 26.3
11	23 42 47.93	11.418	3 22 46.6	75.56	0 26.9
12	23 47 21.77	11.403	2 52 30.3	75.79	0 27.5
13	23 51 55.27	11.390	2 22 9.0	75.98	0 28.1
14	23 56 28.48	11.379	1 51 43.5	76.14	0 28.7
15	0 1 1.44	11.369	1 21 14.5	76.27	0 29.4
16	0 5 34.18	11.360	0 50 42.7	76.37	0 30.0
17	0 10 6.74	11.354	−0 20 8.9	76.44	0 30.6
18	0 14 39.18	11.350	+0 10 26.2	76.48	0 31.2
19	0 19 11.52	11.346	0 41 1.9	76.49	0 31.8
20	0 23 43.81	11.345	1 11 37.4	76.46	0 32.4
21	0 28 16.09	11.345	1 42 11.9	76.40	0 32.9
22	0 32 48.39	11.348	2 12 44.6	76.32	0 33.5
23	0 37 20.79	11.352	2 43 15.0	76.20	0 34.1
24	0 41 53.29	11.358	3 13 42.2	76.06	0 34.7
25	0 46 25.95	11.365	3 44 5.5	75.88	0 35.3
26	0 50 58.79	11.373	4 14 24.1	75.67	0 35.9
27	0 55 31.86	11.384	4 44 37.2	75.42	0 36.5
28	1 0 5.22	11.397	5 14 44.3	75.16	0 37.2
29	1 4 38.91	11.411	5 44 44.6	74.86	0 37.8
30	1 9 12.96	11.427	6 14 37.3	74.52	0 38.4
31	1 13 47.41	11.445	6 44 21.7	74.17	0 39.0
32	1 18 22.31	11.464	+7 13 57.1	+73.78	0 39.7

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	5″.0	5″.0	5″.0	5″.0	5″.0	5″.0
Hor. Parallax	5.2	5.2	5.2	5.2	5.2	5.2

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	1 18 22.31	11.464	+ 7 13 57.1	+73.78	0 39.7
2	1 22 57.69	11.485	7 43 22.8	73.36	0 40.3
3	1 27 33.61	11.508	8 12 38.0	72.91	0 41.0
4	1 32 10.09	11.533	8 41 42.1	72.43	0 41.7
5	1 36 47.17	11.560	9 10 34.3	71.92	0 42.3
6	1 41 24.89	11.587	9 39 13.9	71.37	0 43.0
7	1 46 3.30	11.616	10 7 40.0	70.80	0 43.7
8	1 50 42.43	11.646	10 35 52.1	70.20	0 44.4
9	1 55 22.31	11.678	11 3 49.4	69.57	0 45.1
10	2 0 2.96	11.711	11 31 31.1	68.90	0 45.9
11	2 4 44.44	11.746	11 58 56.4	68.20	0 46.6
12	2 9 26.76	11.782	12 26 4.7	67.48	0 47.4
13	2 14 9.97	11.819	12 52 55.1	66.72	0 48.2
14	2 18 54.08	11.857	13 19 26.9	65.92	0 49.0
15	2 23 39.11	11.896	13 45 39.3	65.10	0 49.8
16	2 28 25.09	11.936	14 11 31.6	64.25	0 50.6
17	2 33 12.05	11.977	14 37 3.0	63.36	0 51.5
18	2 37 59.99	12.018	15 2 12.8	62.44	0 52.3
19	2 42 48.93	12.061	15 27 0.1	61.49	0 53.2
20	2 47 38.92	12.105	15 51 24.2	60.51	0 54.1
21	2 52 29.95	12.148	16 15 24.4	59.50	0 55.0
22	2 57 22.01	12.192	16 38 59.8	58.45	0 55.9
23	3 2 15.16	12.237	17 2 9.8	57.38	0 56.9
24	3 7 9.40	12.282	17 24 53.7	56.27	0 57.8
25	3 12 4.72	12.328	17 47 10.6	55.13	0 58.8
26	3 17 1.14	12.373	18 8 59.9	53.97	0 59.8
27	3 21 58.64	12.419	18 30 20.8	52.77	1 0.8
28	3 26 57.24	12.465	18 51 12.7	51.54	1 1.8
29	3 31 56.94	12.511	19 11 34.6	50.28	1 2.9
30	3 36 57.74	12.557	19 31 26.2	49.00	1 4.0
31	3 41 59.63	12.602	19 50 46.6	47.69	1 5.1
32	3 47 2.61	12.647	+20 9 35.1	+46.35	1 6.2

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	5″.0	5″.1	5″.1	5″.1	5″.2	5″.2	5″.3
Hor. Parallax	5.2	5.3	5.3	5.3	5.4	5.4	5.5

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 41 59.63	12.602	+19 50 46.6	+47.69	1 5.1
2	3 47 2.61	12.647	20 9 35.1	46.35	1 6.2
3	3 52 6.69	12.692	20 27 51.1	44.98	1 7.3
4	3 57 11.83	12.736	20 45 34.2	43.59	1 8.5
5	4 2 18.04	12.780	21 2 43.4	42.17	1 9.6
6	4 7 25.29	12.824	21 19 18.1	40.72	1 10.8
7	4 12 33.57	12.866	21 35 17.9	39.25	1 12.0
8	4 17 42.85	12.907	21 50 42.1	37.76	1 13.2
9	4 22 53.12	12.948	22 5 30.0	36.23	1 14.4
10	4 28 4.34	12.987	22 19 41.0	34.68	1 15.7
11	4 33 16.49	13.025	22 33 14.7	33.11	1 16.9
12	4 38 39.53	13.061	22 46 10.5	31.52	1 18.2
13	4 43 43.43	13.096	22 58 27.7	29.91	1 19.5
14	4 48 58.13	13.129	23 10 6.1	28.28	1 20.8
15	4 54 13.59	13.160	23 21 5.1	26.63	1 22.1
16	4 59 29.79	13.189	23 31 24.2	24.96	1 23.5
17	5 4 46.67	13.216	23 41 3.0	23.27	1 24.8
18	5 10 4.17	13.241	23 50 1.1	21.57	1 26.1
19	5 15 22.25	13.264	23 58 18.1	19.84	1 27.5
20	5 20 40.86	13.284	24 5 53.5	18.10	1 28.9
21	5 25 59.92	13.302	24 12 47.0	16.36	1 30.2
22	5 31 19.38	13.318	24 18 58.5	14.60	1 31.6
23	5 36 39.18	13.331	24 24 27.7	12.83	1 33.0
24	5 41 59.28	13.342	24 29 14.2	11.05	1 34.4
25	5 47 19.61	13.350	24 33 18.1	9.27	1 35.8
26	5 52 40.10	13.356	24 36 39.2	7.48	1 37.2
27	5 58 0.70	13.360	24 39 17.1	5.68	1 38.6
28	6 3 21.34	13.360	24 41 11.9	3.88	1 40.0
29	6 8 41.95	13.358	24 42 23.5	2.08	1 41.4
30	6 14 2.49	13.353	24 42 51.8	+ 0.28	1 42.8
31	6 19 22.88	13.346	24 42 36.8	– 1.52	1 44.2
32	6 24 43.07	13.336	+24 41 38.7	– 3.32	1 45.6

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	5″.3	5″.3	5″.4	5″.4	5″.5	5″.6	5″.7
Hor. Parallax	5.5	5.5	5.6	5.6	5.7	5.8	5.9

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 24 43.07	13.336	+24 41 38.7	– 3.32	1 45.6
2	6 30 2.98	13.324	24 39 57.4	5.12	1 47.0
3	6 35 22.58	13.309	24 37 33.0	6.91	1 48.4
4	6 40 41.80	13.292	24 34 25.7	8.70	1 49.8
5	6 46 0.56	13.272	24 30 35.5	10.48	1 51.1
6	6 51 18.82	13.250	24 26 2.6	12.25	1 52.5
7	6 56 36.53	13.225	24 20 47.4	14.02	1 53.8
8	7 1 53.62	13.198	24 14 50.0	15.77	1 55.2
9	7 7 10.02	13.168	24 8 10.6	17.51	1 56.5
10	7 12 25.69	13.137	24 0 49.7	19.23	1 57.8
11	7 17 40.58	13.103	23 52 47.5	20.95	1 59.1
12	7 22 54.62	13.067	23 44 4.2	22.65	2 0.4
13	7 28 7.78	13.029	23 34 40.3	24.33	2 1.7
14	7 33 20.00	12.989	23 24 36.2	26.00	2 3.0
15	7 38 31.22	12.947	23 13 52.3	27.65	2 4.2
16	7 43 41.42	12.903	23 2 29.2	29.28	2 5.4
17	7 48 50.55	12.857	22 50 27.3	30.88	2 6.6
18	7 53 58.55	12.809	22 37 47.2	32.47	2 7.8
19	7 59 5.36	12.759	22 24 29.0	34.04	2 9.0
20	8 4 10.98	12.708	22 10 33.6	35.58	2 10.1
21	8 9 15.35	12.656	21 56 1.4	37.09	2 11.3
22	8 14 18.47	12.603	21 40 53.5	38.58	2 12.4
23	8 19 20.29	12.548	21 25 10.0	40.04	2 13.4
24	8 24 20.78	12.493	21 8 51.6	41.48	2 14.5
25	8 29 19.93	12.436	20 51 59.0	42.90	2 15.6
26	8 34 17.73	12.379	20 34 32.7	44.28	2 16.7
27	8 39 14.14	12.321	20 16 33.6	45.64	2 17.7
28	8 44 9.15	12.263	19 58 2.2	46.97	2 18.6
29	8 49 2.76	12.204	19 38 59.1	48.28	2 19.6
30	8 53 54.96	12.145	19 19 25.1	49.55	2 20.5
31	8 58 45.74	12.086	18 59 20.9	50.80	2 21.4
32	9 3 35.11	12.027	+18 38 47.0	–52.02	2 22.3

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	5″.8	5″.9	6″.0	6″.1	6″.2	6″.4
Hor. Parallax	6.0	6.1	6.2	6.3	6.4	6.6

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	8 58 45.74	12.086	+18 59 20.9	−50.80	2 21.4
2	9 3 35.11	12.027	18 38 47.0	52.02	2 22.3
3	9 8 23.05	11.968	18 17 44.1	53.21	2 23.1
4	9 13 9.57	11.909	17 56 13.0	54.37	2 23.9
5	9 17 54.70	11.851	17 34 14.4	55.50	2 24.7
6	9 22 38.42	11.792	17 11 49.0	56.61	2 25.5
7	9 27 20.73	11.734	16 48 57.4	57.69	2 26.3
8	9 32 1.65	11.676	16 25 40.2	58.73	2 27.0
9	9 36 41.19	11.619	16 1 58.4	59.75	2 27.7
10	9 41 19.36	11.563	15 37 52.5	60.73	2 28.4
11	9 45 56.17	11.507	15 13 23.3	61.69	2 29.1
12	9 50 31.65	11.451	14 48 31.5	62.62	2 29.7
13	9 55 5.80	11.395	14 23 17.8	63.52	2 30.4
14	9 59 38.63	11.341	13 57 42.8	64.38	2 31.0
15	10 4 10.16	11.287	13 31 47.5	65.22	2 31.6
16	10 8 40.42	11.234	13 5 32.4	66.03	2 32.2
17	10 13 9.42	11.182	12 38 58.4	66.80	2 32.7
18	10 17 37.17	11.131	12 12 6.0	67.55	2 33.2
19	10 22 3.70	11.080	11 44 56.0	68.27	2 33.7
20	10 26 29.03	11.031	11 17 29.4	68.95	2 34.2
21	10 30 53.19	10.983	10 49 46.7	69.60	2 34.7
22	10 35 16.21	10.935	10 21 48.6	70.23	2 35.1
23	10 39 38.09	10.888	9 53 35.9	70.83	2 35.5
24	10 43 58.87	10.843	9 25 9.0	71.40	2 35.9
25	10 48 18.58	10.799	8 56 29.1	71.93	2 36.3
26	10 52 37.24	10.756	8 27 36.7	72.44	2 36.6
27	10 56 54.88	10.715	7 58 32.4	72.92	2 36.9
28	11 1 11.55	10.675	7 29 16.8	73.37	2 37.3
29	11 5 27.27	10.636	6 59 50.8	73.79	2 37.6
30	11 9 42.07	10.598	6 30 14.9	74.19	2 37.9
31	11 13 55.99	10.562	6 0 29.8	74.56	2 38.2
32	11 18 9.06	10.527	+ 5 30 36.2	−74.90	2 38.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	6″.6	6″.7	6″.9	7″.1	7″.3	7″.5
Hor. Parallax	6.7	6.9	7.1	7.3	7.5	7.7

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 18 9.06	10.527	+ 5 30 36.2	−74.90	2 38.5
2	11 22 21.31	10.494	5 0 34.7	75.22	2 38.8
3	11 26 32.79	10.463	4 30 26.0	75.51	2 39.1
4	11 30 43.52	10.432	4 0 10.5	75.77	2 39.3
5	11 34 53.54	10.403	3 29 49.1	76.00	2 39.5
6	11 39 2.88	10.376	2 59 22.5	76.22	2 39.7
7	11 43 11.59	10.350	2 28 50.9	76.41	2 39.9
8	11 47 19.69	10.326	1 58 15.2	76.56	2 40.1
9	11 51 27.23	10.302	1 27 36.1	76.70	2 40.3
10	11 55 34.22	10.280	0 56 54.0	76.80	2 40.4
11	11 59 40.68	10.259	+ 0 26 9.8	76.88	2 40.6
12	12 3 46.66	10.240	− 0 4 35.9	76.92	2 40.7
13	12 7 52.19	10.221	0 35 22.4	76.94	2 40.9
14	12 11 57.28	10.204	1 6 9.1	76.94	2 41.0
15	12 16 1.98	10.188	1 36 55.4	76.92	2 41.2
16	12 20 6.31	10.173	2 7 40.8	76.86	2 41.3
17	12 24 10.28	10.159	2 38 24.6	76.78	2 41.4
18	12 28 13.92	10.146	3 9 5.8	76.66	2 41.5
19	12 32 17.28	10.134	3 39 44.0	76.52	2 41.6
20	12 36 20.36	10.123	4 10 18.5	76.35	2 41.8
21	12 40 23.19	10.113	4 40 48.6	76.16	2 41.9
22	12 44 25.80	10.104	5 11 13.8	75.94	2 42.0
23	12 48 28.20	10.096	5 41 33.4	75.69	2 42.1
24	12 52 30.42	10.089	6 11 46.7	75.42	2 42.1
25	12 56 32.49	10.083	6 41 53.1	75.12	2 42.2
26	13 0 34.42	10.078	7 11 52.1	74.79	2 42.3
27	13 4 36.23	10.073	7 41 43.0	74.45	2 42.4
28	13 8 37.95	10.070	8 11 25.3	74.07	2 42.5
29	13 12 39.60	10.068	8 40 58.1	73.67	2 42.6
30	13 16 41.20	10.067	9 10 21.0	73.24	2 42.7
31	13 20 42.77	10.066	9 39 33.4	72.79	2 42.8
32	13 24 44.35	10.066	−10 8 34.9	−72.33	2 42.8

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	7″.7	8″.0	8″.3	8″.6	9″.0	9″.3
Hor. Parallax	8.0	8.3	8.6	8.9	9.2	9.6

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 24 44.35	10.066	−10 8 34.9	−72.33	2 42.8
2	13 28 45.94	10.067	10 37 24.9	71.85	2 42.9
3	13 32 47.55	10.068	11 6 2.7	71.31	2 43.0
4	13 36 49.20	10.070	11 34 27.7	70.77	2 43.1
5	13 40 50.89	10.073	12 2 39.3	70.19	2 43.2
6	13 44 52.66	10.075	12 30 36.8	69.60	2 43.3
7	13 48 54.48	10.078	12 58 19.8	68.98	2 43.4
8	13 52 56.39	10.081	13 25 47.5	68.33	2 43.4
9	13 56 58.37	10.084	13 52 59.6	67.67	2 43.5
10	14 1 0.42	10.087	14 19 55.3	66.97	2 43.6
11	14 5 2.55	10.090	14 46 34.1	66.25	2 43.7
12	14 9 4.74	10.092	15 12 55.3	65.51	2 43.8
13	14 13 6.98	10.094	15 38 58.4	64.74	2 43.9
14	14 17 9.26	10.096	16 4 42.5	63.94	2 44.0
15	14 21 11.57	10.096	16 30 7.2	63.12	2 44.1
16	14 25 13.88	10.096	16 55 11.9	62.27	2 44.2
17	14 29 16.17	10.095	17 19 55.9	61.40	2 44.3
18	14 33 18.41	10.092	17 44 18.8	60.50	2 44.4
19	14 37 20.58	10.088	18 8 19.8	59.58	2 44.5
20	14 41 22.65	10.083	18 31 58.4	58.64	2 44.6
21	14 45 24.56	10.076	18 55 14.2	57.67	2 44.7
22	14 49 26.29	10.068	19 18 6.4	56.68	2 44.7
23	14 53 27.82	10.058	19 40 34.7	55.67	2 44.8
24	14 57 29.08	10.046	20 2 38.3	54.63	2 44.9
25	15 1 30.03	10.033	20 24 16.9	53.58	2 45.0
26	15 5 30.64	10.017	20 45 30.0	52.51	2 45.0
27	15 9 30.84	9.999	21 6 17.0	51.41	2 45.1
28	15 13 30.59	9.979	21 26 37.7	50.30	2 45.2
29	15 17 29.82	9.956	21 46 31.5	49.18	2 45.2
30	15 21 28.48	9.931	22 5 58.1	48.03	2 45.2
31	15 25 26.51	9.903	22 24 57.0	46.87	2 45.3
32	15 29 23.83	+9.872	−22 43 27.8	−45.69	2 45.3

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	9″.8	10″.2	10″.7	11″.3	11″.9	12″.6
Hor. Parallax	10.1	10.6	11.1	11.7	12.3	12.9

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 25 26.51	+9.903	−22 24 57.0	−46.87	2 45.3
2	15 29 23.83	9.872	22 43 27.8	45.69	2 45.3
3	15 33 20.36	9.838	23 1 30.1	44.50	2 45.3
4	15 37 16.05	9.801	23 19 3.6	43.29	2 45.2
5	15 41 10.78	9.760	23 36 8.1	42.07	2 45.2
6	15 45 4.49	9.715	23 52 43.0	40.83	2 45.2
7	15 48 57.05	9.665	24 8 48.1	39.59	2 45.1
8	15 52 48.37	9.611	24 24 23.1	38.33	2 45.0
9	15 56 38.35	9.553	24 39 27.7	37.05	2 44.9
10	16 0 26.86	9.489	24 54 1.5	35.77	2 44.7
11	16 4 13.77	9.419	25 8 4.4	34.47	2 44.6
12	16 7 58.94	9.345	25 21 35.9	33.16	2 44.3
13	16 11 42.25	9.263	25 34 36.0	31.85	2 44.1
14	16 15 23.52	9.175	25 47 4.5	30.52	2 43.8
15	16 19 2.60	9.081	25 59 0.9	29.18	2 43.5
16	16 22 39.33	8.979	26 10 25.2	27.84	2 43.2
17	16 26 13.54	8.870	26 21 17.3	26.50	2 42.8
18	16 29 45.04	8.754	26 31 37.1	25.15	2 42.4
19	16 33 13.65	8.629	26 41 24.4	23.80	2 41.9
20	16 36 39.18	8.497	26 50 39.3	22.44	2 41.3
21	16 40 1.44	8.357	26 59 21.6	21.08	2 40.7
22	16 43 20.24	8.209	27 7 31.2	19.72	2 40.2
23	16 46 35.36	8.050	27 15 8.2	18.36	2 39.6
24	16 49 46.57	7.883	27 22 12.6	17.00	2 38.9
25	16 52 53.67	7.707	27 28 44.4	15.65	2 38.0
26	16 55 56.43	7.521	27 34 43.7	14.29	2 37.1
27	16 58 54.61	7.326	27 40 10.5	12.94	2 36.1
28	17 1 47.99	7.121	27 45 4.8	11.59	2 35.0
29	17 4 36.34	6.906	27 49 26.7	10.24	2 33.9
30	17 7 19.39	6.680	27 53 16.4	8.90	2 32.7
31	17 9 56.90	6.444	27 56 33.8	7.56	2 31.3
32	17 12 28.59	+6.195	−27 59 19.1	− 6.22	2 30.0

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	13″.4	14″.2	15″.2	16″.3	17″.5	18″.8
Hor. Parallax	13.8	14.7	15.7	16.8	18.1	19.5

Note.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	17 12 28.59	+6.195	−27 59 19.1	− 6.22	2 30.0
2	17 14 54.18	5.936	28 1 32.1	4.88	2 28.4
3	17 17 13.43	5.665	28 3 13.2	3.54	2 26.8
4	17 19 26.02	5.383	28 4 22.1	2.20	2 25.0
5	17 21 31.71	5.089	28 4 58.7	− 0.86	2 23.2
6	17 23 30.18	4.782	28 5 3.0	+ 0.49	2 21.2
7	17 25 21.13	4.462	28 4 34.9	1.85	2 19.1
8	17 27 4.24	4.129	28 3 34.1	3.21	2 17.0
9	17 28 39.22	3.783	28 2 0.5	4.58	2 14.7
10	17 30 5.74	3.425	27 59 53.9	5.96	2 12.1
11	17 31 23.51	3.053	27 57 14.1	7.36	2 9.4
12	17 32 32.21	2.669	27 54 0.4	8.78	2 6.6
13	17 33 31.54	2.272	27 50 12.3	10.22	2 3.7
14	17 34 21.19	1.864	27 45 49.5	11.68	2 0.6
15	17 35 0.94	1.445	27 40 51.5	13.16	1 57.4
16	17 35 30.49	1.016	27 35 17.7	14.67	1 53.9
17	17 35 49.64	0.578	27 29 7.3	16.20	1 50.3
18	17 35 58.18	+0 133	27 22 19.7	17.78	1 46.4
19	17 35 55.97	−0.317	27 14 53.8	19.38	1 42.4
20	17 35 42.90	0.772	27 6 49.2	21.02	1 38.3
21	17 35 18.91	1.228	26 58 4.9	22.69	1 33.9
22	17 34 43.98	1.682	26 48 40.0	24.38	1 29.4
23	17 33 58.15	2.135	26 38 34.3	26.11	1 24.7
24	17 33 1.56	2.579	26 27 46.8	27.85	1 19.9
25	17 31 54.45	3.012	26 16 17.4	29.61	1 14.8
26	17 30 37.06	3.434	26 4 5.6	31.38	1 9.6
27	17 29 9.76	3.838	25 51 11.4	33.13	1 4.2
28	17 27 32.99	4.223	25 37 35.3	34.87	0 58.7
29	17 25 47.27	4.583	25 23 17.9	36.58	0 53.0
30	17 23 53.21	4 916	25 8 19.8	38.24	0 47.2
31	17 21 51.51	5.220	24 52 42.7	39.83	0 41.2
32	17 19 42.93	−5.490	−24 36 28.4	+41.34	0 35.1

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	20″.4	22″.2	24″.1	26″.1	28″.2	30″.1
Hor. Parallax	21.1	22.9	24.9	27.1	29.2	31.2

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	17 21 51.51	−5.220	−24 52 42.7	+39.83	0 41.2
2	17 19 42.93	5.490	24 36 28.4	41.34	0 35.1
3	17 17 28.29	5.723	24 19 39.3	42.74	0 29.0
4	17 15 8.52	5.918	24 2 17.9	44.03	0 22.8
5	17 12 44.57	6.072	23 44 27.5	45.15	0 16.4
6	17 10 17.43	6.183	23 26 12.1	46.10	0 10.1
7	17 7 48.14	6.251	23 7 35.9	46.88	0 3.7 23 57.2
8	17 5 17.74	6.276	22 48 43.7	47.44	23 50.8
9	17 2 47.27	6.256	22 29 40.4	47.79	23 44.4
10	17 0 17.80	6.192	22 10 31.4	47.92	23 38.0
11	16 57 50.37	6.086	21 51 22.4	47.81	23 31.6
12	16 55 26.00	5.939	21 32 18.9	47.45	23 25.3
13	16 53 5.60	5.754	21 13 26.7	46.86	23 19.2
14	16 50 50.11	5.532	20 54 51.7	46.03	23 13.2
15	16 48 40.35	5.276	20 36 39.2	44.98	23 7.1
16	16 46 37.11	4.989	20 18 54.2	43.73	23 1.3
17	16 44 41.11	4.674	20 1 41.8	42.27	22 55.6
18	16 42 52.97	4.334	19 45 6.7	40.62	22 50.1
19	16 41 13.24	3.973	19 29 13.3	38.80	22 44.5
20	16 39 42.39	3.594	19 14 5.3	36.86	22 39.3
21	16 38 20.84	3.200	18 59 45.1	34.80	22 34.1
22	16 37 8.87	2.795	18 46 15.6	32.63	22 29.2
23	16 36 6.73	2.382	18 33 39.4	30.38	22 24.3
24	16 35 14.60	1.962	18 21 57.7	28.11	22 19.7
25	16 34 32.57	1.540	18 11 11.5	25.78	22 15.3
26	16 34 0.68	1.117	18 1 21.1	23.43	22 10.9
27	16 33 38.94	0.695	17 52 26.7	21.10	22 6.8
28	16 33 27.28	−0.277	17 44 28.2	18.78	22 2.8
29	16 33 25.60	+0.136	17 37 25.0	16.50	21 58.9
30	16 33 33.75	0.543	17 31 15.8	14.28	21 55.3
31	16 33 51.61	0.943	17 25 59.3	12.11	21 51.8
32	16 34 18.96	+1.335	−17 21 34.1	+10.00	21 48.5

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter	31″.6	32″.3	32″.1	31″.1	29″.5	27″.5	25″.4
Hor. Parallax	32.7	33.4	33.2	32.2	30.5	28.5	26.3

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

MARS, 1874.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	22 10 52.88	+7.343	−12 20 23.3	+42.87	3 26.9
2	22 13 48.91	7.326	12 3 11.4	43.13	3 25.9
3	22 16 44.54	7.309	11 45 53.3	43.38	3 24.8
4	22 19 39.78	7.293	11 28 29.4	43.62	3 23.8
5	22 22 34.65	7.278	11 10 59.8	43.86	3 22.8
6	22 25 29.14	7.262	10 53 24.5	44.08	3 21.8
7	22 28 23.26	7.247	10 35 43.7	44.30	3 20.7
8	22 31 17.01	7.232	10 17 57.8	44.51	3 19.7
9	22 34 10.41	7.218	10 0 6.8	44.72	3 18.6
10	22 37 3.46	7.204	9 42 11.0	44.92	3 17.6
11	22 39 56.17	7.190	9 24 10.6	45.11	3 16.5
12	22 42 48.56	7.176	9 6 5.6	45.29	3 15.4
13	22 45 40.62	7.163	8 47 56.4	45.47	3 14.4
14	22 48 32.35	7.150	8 29 43.0	45.64	3 13.3
15	22 51 23.78	7.137	8 11 25.8	45.80	3 12.2
16	22 54 14.89	7.124	7 53 4.9	45.94	3 11.1
17	22 57 5.71	7.112	7 34 40.5	46.08	3 10.0
18	22 59 56.24	7.100	7 16 12.9	46.21	3 8.9
19	23 2 46.47	7.088	6 57 42.1	46.34	3 7.8
20	23 5 36.42	7.075	6 39 8.4	46.46	3 6.7
21	23 8 26.09	7.063	6 20 32.0	46.57	3 5.6
22	23 11 15.48	7.052	6 1 53.2	46.67	3 4.5
23	23 14 4.60	7.041	5 43 12.1	46.76	3 3.3
24	23 16 53.45	7.030	5 24 28.9	46.84	3 2.2
25	23 19 42.05	7.020	5 5 43.9	46.92	3 1.1
26	23 22 30.40	7.009	4 46 57.2	46.98	2 59.9
27	23 25 18.50	6.999	4 28 9.1	47.03	2 58.8
28	23 28 6.37	6.989	4 9 19.7	47.08	2 57.6
29	23 30 54.01	6.980	3 50 29.2	47.12	2 56.5
30	23 33 41.43	6.971	3 31 37.8	47.15	2 55.3
31	23 36 28.63	6.963	3 12 45.7	47.18	2 54.2
32	23 39 15.62	+6.955	− 2 53 52.9	+47.21	2 53.0

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	2″.8	2″.7	2″.7	2″.6	2″.6	2″.6	2″.5
Hor. Parallax	4.9	4.8	4.7	4.6	4.6	4.5	4.4

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 39 15.62	+6.955	− 2 53 52.9	+47.21	2 53.0
2	23 42 2.42	6.947	2 34 59.8	47.22	2 51.9
3	23 44 49.04	6.939	2 16 6.6	47.22	2 50.7
4	23 47 35.48	6.932	1 57 13.3	47.22	2 49.5
5	23 50 21.75	6.925	1 38 20.0	47.21	2 48.4
6	23 53 7.86	6.918	1 19 27.1	47.19	2 47.2
7	23 55 53.82	6.912	1 0 34.7	47.17	2 46.0
8	23 58 39.65	6.907	0 41 42.9	47.14	2 44.8
9	0 1 25.35	6.902	0 22 51.9	47.11	2 43.7
10	0 4 10.93	6.897	− 0 4 1.8	47.07	2 42.5
11	0 6 56.40	6.892	+ 0 14 47.3	47.02	2 41.3
12	0 9 41.76	6.888	0 33 35.1	46.96	2 40.1
13	0 12 27.03	6.884	0 52 21.4	46.90	2 38.9
14	0 15 12.21	6.881	1 11 6.1	46.83	2 37.7
15	0 17 57.31	6.878	1 29 49.0	46.75	2 36.5
16	0 20 42.33	6.875	1 48 29.9	46.66	2 35.4
17	0 23 27.29	6.872	2 7 8.8	46.57	2 34.2
18	0 26 12.19	6.869	2 25 45.4	46.47	2 33.0
19	0 28 57.03	6.867	2 44 19.5	46.36	2 31.8
20	0 31 41.83	6.865	3 2 51.0	46.25	2 30.6
21	0 34 26.59	6.863	3 21 19.6	46.13	2 29.4
22	0 37 11.31	6.862	3 39 45.3	46.00	2 28.2
23	0 39 56.00	6.861	3 58 7.7	45.86	2 27.0
24	0 42 40.67	6.861	4 16 26 8	45.72	2 25.8
25	0 45 25.32	6.860	4 34 42.4	45.57	2 24.6
26	0 48 9.95	6.859	4 52 54.3	45.42	2 23.4
27	0 50 54.57	6.859	5 11 2.4	45.26	2 22.2
28	0 53 39.20	6.860	5 29 6.6	45.09	2 21.0
29	0 56 23.84	6.861	5 47 6.6	44.91	2 19.8
30	0 59 8.50	6.862	6 5 2.3	44.73	2 18.6
31	1 1 53.19	6.863	6 22 53.7	44.54	2 17.4
32	1 4 37.92	+6.864	+ 6 40 40.5	+44.35	2 16.2

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	2″.5	2″.5	2″.4	2″.4	2″.4	2″.3
Hor. Parallax	4.4	4.3	4.3	4.2	4.1	4.1

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	0 56 23.84	+6.861	+ 5 47 6.6	+44.91	2 19.8
2	0 59 8.50	6.862	6 5 2.3	44.73	2 18.6
3	1 1 53.19	6.863	6 22 53.7	44.54	2 17.4
4	1 4 37.92	6.864	6 40 40.5	44.35	2 16.2
5	1 7 22.69	6.866	6 58 22.5	44.15	2 15.0
6	1 10 7.50	6.868	7 15 59.8	43.95	2 13.8
7	1 12 52.36	6.871	7 33 32.1	43.74	2 12.6
8	1 15 37.30	6.874	7 50 59.2	43.53	2 11.4
9	1 18 22.32	6.877	8 8 21.1	43.31	2 10.2
10	1 21 7.42	6.881	8 25 37.7	43.08	2 9.1
11	1 23 52.62	6.885	8 42 48.8	42.85	2 7.9
12	1 26 37.91	6.889	8 59 54.2	42.61	2 6.7
13	1 29 23.31	6.893	9 16 53.9	42.36	2 5.5
14	1 32 8.82	6.898	9 33 47.7	42.11	2 4.3
15	1 34 54.43	6.903	9 50 35.4	41.86	2 3.1
16	1 37 40.17	6.909	10 7 17.0	41.60	2 1.9
17	1 40 26.03	6.914	10 23 52.3	41.33	2 0.8
18	1 43 12.03	6.919	10 40 21.1	41.06	1 59.6
19	1 45 58.16	6.924	10 56 43.2	40.78	1 58.4
20	1 48 44.42	6.930	11 12 58.5	40.49	1 57.3
21	1 51 30.82	6.936	11 29 6.9	40.20	1 56.1
22	1 54 17.36	6.943	11 45 8.3	39.90	1 54.9
23	1 57 4.05	6.949	12 1 2.5	39.60	1 53.8
24	1 59 50.88	6.955	12 16 49.3	39.30	1 52.6
25	2 2 37.86	6.961	12 32 28.5	38.98	1 51.4
26	2 5 24.98	6.967	12 48 0.1	38.66	1 50.3
27	2 8 12.26	6.974	13 3 24.1	38.33	1 49.1
28	2 10 59.72	6.981	13 18 40.1	38.00	1 48.0
29	2 13 47.35	6.988	13 33 48.1	37.66	1 46.8
30	2 16 35.14	6.995	13 48 48.1	37.32	1 45.7
31	2 19 23.09	7.002	14 3 39.7	36.97	1 44.5
32	2 22 11.22	+7.009	+14 18 23.0	+36.62	1 43.4

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	2″.3	2″.3	2″.3	2″.3	2″.2	2″.2
Hor. Parallax	4.1	4.0	4.0	3.9	3.9	3.9

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	2 22 11.22	+7.009	+14 18 23.0	+36.62	1 43.4
2	2 24 59.53	7.016	14 32 57.9	36.27	1 42.3
3	2 27 48.03	7.024	14 47 24.2	35.92	1 41.1
4	2 30 36.71	7.032	15 1 41.9	35.56	1 40.0
5	2 33 25.59	7.040	15 15 50.8	35.19	1 38.9
6	2 36 14.66	7.048	15 29 50.8	34.81	1 37.8
7	2 39 3.93	7.057	15 43 41.8	34.43	1 36.6
8	2 41 53.41	7.065	15 57 23.6	34.05	1 35.5
9	2 44 43.09	7.074	16 10 56.3	33.67	1 34.4
10	2 47 32.98	7.083	16 24 19.8	33.28	1 33.3
11	2 50 23.08	7.092	16 37 33.8	32.89	1 32.2
12	2 53 13.39	7.100	16 50 38.3	32.49	1 31.1
13	2 56 3.91	7.109	17 3 33.2	32.09	1 30.0
14	2 58 54.64	7.118	17 16 18.3	31.68	1 28.9
15	3 1 45.59	7.127	17 28 53.6	31.26	1 27.8
16	3 4 36.74	7.136	17 41 18.9	30.84	1 26.7
17	3 7 28.09	7.144	17 53 34.1	30.42	1 25.6
18	3 10 19.65	7.153	18 5 39.2	29.99	1 24.5
19	3 13 11.41	7.161	18 17 34.0	29.56	1 23.5
20	3 16 3.37	7.169	18 29 18.4	29.13	1 22.4
21	3 18 55.53	7.177	18 40 52.2	28.69	1 21.3
22	3 21 47.88	7.185	18 52 15.5	28.25	1 20.2
23	3 24 40.43	7.193	19 3 28.1	27.81	1 19.2
24	3 27 33.16	7.201	19 14 29.9	27.36	1 18.1
25	3 30 26.08	7.209	19 25 20.8	26.90	1 17.1
26	3 33 19.19	7.217	19 36 0.8	26.44	1 16.0
27	3 36 12.48	7.224	19 46 29.8	25.98	1 14.9
28	3 39 5.96	7.232	19 56 47.6	25.51	1 13.9
29	3 41 59.61	7.239	20 6 54.3	25.04	1 12.8
30	3 44 53.44	7.246	20 16 49.7	24.57	1 11.8
31	3 47 47.44	7.253	20 26 33.7	24.10	1 10.8
32	3 50 41.61	+7.260	+20 36 6.4	+23.62	1 9.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	2″.2	2″.2	2″.1	2″.1	2″.1	2″.1	2″.1
Hor. Parallax	3.8	3.8	3.7	3.7	3.7	3.6	3.6

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 47 47.44	+7.253	+20 26 33.7	+24.10	1 10.8
2	3 50 41.61	7.260	20 36 6.4	23.62	1 9.7
3	3 53 35.96	7.268	20 45 27.6	23.14	1 8.7
4	3 56 30.48	7.275	20 54 37.3	22.66	1 7.7
5	3 59 25.16	7.282	21 3 35.3	22.17	1 6.6
6	4 2 20.01	7.289	21 12 21.7	21.69	1 5.6
7	4 5 15.02	7.296	21 20 56.5	21.20	1 4.6
8	4 8 10.18	7.302	21 29 19.5	20.71	1 3.5
9	4 11 5.50	7.308	21 37 30.6	20.22	1 2.5
10	4 14 0.97	7.314	21 45 29.9	19.72	1 1.5
11	4 16 56.57	7.320	21 53 17.2	19.22	1 0.5
12	4 19 52.31	7.326	22 0 52.5	18.72	0 59.5
13	4 22 48.19	7.331	22 8 15.7	18.22	0 58.5
14	4 25 44.19	7.336	22 15 26.8	17.71	0 57.5
15	4 28 40.32	7.341	22 22 25.7	17.20	0 56.5
16	4 31 36.56	7.345	22 29 12.4	16.69	0 55.5
17	4 34 32.90	7.349	22 35 46.8	16.18	0 54.4
18	4 37 29.33	7.353	22 42 8.9	15.67	0 53.4
19	4 40 25.85	7.356	22 48 18.6	15.15	0 52.4
20	4 43 22.44	7.359	22 54 16.0	14.63	0 51.4
21	4 46 19.11	7.362	23 0 0.9	14.11	0 50.5
22	4 49 15.83	7.365	23 5 33.4	13.59	0 49.5
23	4 52 12.61	7.367	23 10 53.3	13.06	0 48.5
24	4 55 9.43	7.369	23 16 0.6	12.54	0 47.5
25	4 58 6.29	7.370	23 20 55.3	12.02	0 46.5
26	5 1 3.17	7.371	23 25 37.6	11.50	0 45.5
27	5 4 0.08	7.371	23 30 7.3	10.97	0 44.5
28	5 6 57.00	7.372	23 34 24.3	10.45	0 43.5
29	5 9 53.92	7.372	23 38 28.7	9.92	0 42.5
30	5 12 50.85	7.372	23 42 20.5	9.40	0 41.5
31	5 15 47.77	7.371	23 45 59.8	8.87	0 40.5
32	5 18 44.69	+7.371	+23 49 26.4	+ 8.34	0 39.5

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	2″.1	2″.0	2″.0	2″.0	2″.0	2″.0	2″.0
Hor. Parallax	3.6	3.6	3.6	3.5	3.5	3.5	3.5

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 18 44.69	+7.371	+23 49 26.4	+ 8.34	0 39.5
2	5 21 41.58	7.370	23 52 40.3	7.81	0 38.5
3	5 24 38.45	7.369	23 55 41.6	7.29	0 37.5
4	5 27 35.29	7.368	23 58 30.3	6.76	0 36.5
5	5 30 32.10	7.366	24 1 6.4	6.23	0 35.5
6	5 33 28.87	7.364	24 3 29.9	5.71	0 34.5
7	5 36 25.58	7.362	24 5 40.7	5.18	0 33.5
8	5 39 22.24	7.360	24 7 39.0	4.66	0 32.6
9	5 42 18.83	7.357	24 9 24.7	4.13	0 31.6
10	5 45 15.34	7.353	24 10 57.8	3.61	0 30.6
11	5 48 11.75	7.349	24 12 18.3	3.09	0 29.6
12	5 51 8.06	7.344	24 13 26.3	2.57	0 28.5
13	5 54 4.27	7.340	24 14 21.8	2.05	0 27.5
14	5 57 0.37	7.335	24 15 4.7	1.53	0 26.5
15	5 59 56.35	7.329	24 15 35.2	1.01	0 25.5
16	6 2 52.19	7.323	24 15 53.2	+ 0.49	0 24.5
17	6 5 47.89	7.317	24 15 58.7	− 0.03	0 23.5
18	6 8 43.43	7.311	24 15 51.9	0.54	0 22.5
19	6 11 38.80	7.304	24 15 32.8	1.06	0 21.5
20	6 14 33.99	7.296	24 15 1.3	1.57	0 20.4
21	6 17 29.00	7.288	24 14 17.5	2.08	0 19.4
22	6 20 23.82	7.280	24 13 21.5	2.59	0 18.4
23	6 23 18.43	7.271	24 12 13.4	3.09	0 17.4
24	6 26 12.83	7.262	24 10 53.2	3.59	0 16.3
25	6 29 7.01	7.253	24 9 20.9	4.09	0 15.3
26	6 32 0.98	7.244	24 7 36.6	4.59	0 14.2
27	6 34 54.72	7.234	24 5 40.2	5.09	0 13.2
28	6 37 48.23	7.224	24 3 32.0	5.59	0 12.1
29	6 40 41.49	7.214	24 1 12.0	6.08	0 11.1
30	6 43 34.51	7.204	23 58 40.3	6.57	0 10.0
31	6 46 27.29	7.193	23 55 56.8	7.06	0 9.0
32	6 49 19.80	+7.182	+23 53 1.6	− 7.54	0 7.9

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	2″.0	2″.0	2″.0	1″.9	1″.9	1″.9
Hor. Parallax	3.4	3.4	3.4	3.4	3.4	3.4

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 46 27.29	+7.193	+23 55 56.8	− 7.06	0 9.0
2	6 49 19.80	7.182	23 53 1.6	7.54	0 7.9
3	6 52 12.05	7.171	23 49 54.9	8.02	0 6.8
4	6 55 4.04	7.160	23 46 36.6	8.50	0 5.8
5	6 57 55.75	7.149	23 43 6.9	8.98	0 4.7
6	7 0 47.19	7.138	23 39 25.7	9.45	0 3.6
7	7 3 38.34	7.126	23 35 33.2	9.92	0 2.5
8	7 6 29.20	7.114	23 31 29.4	10.39	0 1.4
9	7 9 19.77	7.101	23 27 14.5	10.85	0 0.3 23 59.2
10	7 12 10.04	7.088	23 22 48.4	11.31	23 58.1
11	7 15 0.00	7.075	23 18 11.4	11.77	23 57.0
12	7 17 49.63	7.062	23 13 23.4	12.23	23 55.9
13	7 20 38.94	7.048	23 8 24.5	12.68	23 54.7
14	7 23 27.93	7.034	23 3 14.8	13.13	23 53.6
15	7 26 16.58	7.020	22 57 54.4	13.57	23 52.5
16	7 29 4.89	7.006	22 52 23.4	14.01	23 51.3
17	7 31 52.86	6.991	22 46 41.9	14.45	23 50.2
18	7 34 40.47	6.976	22 40 50.0	14.88	23 49.0
19	7 37 27.72	6.961	22 34 47.7	15.31	23 47.9
20	7 40 14.61	6.946	22 28 35.2	15.73	23 46.7
21	7 43 1.13	6.931	22 22 12.7	16.15	23 45.5
22	7 45 47.28	6.915	22 15 40.0	16.57	23 44.3
23	7 48 33.06	6.899	22 8 57.3	16.98	23 43.2
24	7 51 18.46	6.883	22 2 4.8	17.39	23 42.0
25	7 54 3.48	6.868	21 55 2.5	17.79	23 40.8
26	7 56 48.13	6.852	21 47 50.6	18.19	23 39.6
27	7 59 32.39	6.836	21 40 29.1	18.59	23 38.4
28	8 2 16.28	6.820	21 32 58.1	18.99	23 37.1
29	8 4 59.78	6.804	21 25 17.7	19.38	23 35.9
30	8 7 42.90	6.788	21 17 28.1	19.76	23 34.7
31	8 10 25.63	6.772	21 9 29.4	20.14	23 33.5
32	8 13 7.98	+6.756	+21 1 21.5	−20.52	23 32.2

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	1″.9	1″.9	1″.9	1″.9	1″.9	1″.9
Hor. Parallax	3.4	3.4	3.4	3.4	3.4	3.4

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	8 13 7.98	+6.756	+21 1 21.5	−20.52	23 32.2
2	8 15 49.95	6.740	20 53 4.5	20.89	23 31.0
3	8 18 31.54	6.724	20 44 38.6	21.26	23 29.7
4	8 21 12.75	6.709	20 36 4.0	21.62	23 28.5
5	8 23 53.57	6.693	20 27 20.7	21.98	23 27.2
6	8 26 34.01	6.676	20 18 28.7	22.34	23 25.9
7	8 29 14.06	6.660	20 9 28.1	22.70	23 24.6
8	8 31 53.73	6.644	20 0 19.2	23.05	23 23.3
9	8 34 33.01	6.629	19 51 2.0	23.39	23 22.1
10	8 37 11.90	6.613	19 41 36.5	23.73	23 20.8
11	8 39 50.39	6.596	19 32 3.0	24.06	23 19.4
12	8 42 28.49	6.579	19 22 21.5	24.39	23 18.1
13	8 45 6.20	6.563	19 12 32.1	24.72	23 16.8
14	8 47 43.51	6.546	19 2 35.0	25.04	23 15.5
15	8 50 20.42	6.529	18 52 30.3	25.35	23 14.2
16	8 52 56.94	6.513	18 42 18.0	25.66	23 12.8
17	8 55 33.07	6.497	18 31 58.3	25.97	23 11.5
18	8 58 8.81	6.480	18 21 31.3	26.28	23 10.1
19	9 0 44.16	6.464	18 10 57.0	26.58	23 8.8
20	9 3 19.12	6.447	18 0 15.6	26.87	23 7.4
21	9 5 53.67	6.431	17 49 27.3	27.16	23 6.0
22	9 8 27.82	6.415	17 38 32.2	27.44	23 4.6
23	9 11 1.59	6.399	17 27 30.3	27.72	23 3.3
24	9 13 34.97	6.383	17 16 21.7	27.99	23 1.9
25	9 16 7.98	6.367	17 5 6.6	28.26	23 0.5
26	9 18 40.62	6.352	16 53 45.0	28.53	22 59.1
27	9 21 12.89	6.337	16 42 17.0	28.79	22 57.7
28	9 23 44.80	6.322	16 30 42.7	29.05	22 56.2
29	9 26 16.35	6.307	16 19 2.2	29.31	22 54.8
30	9 28 47.54	6.292	16 7 15.6	29.57	22 53.4
31	9 31 18.38	6.277	15 55 23.1	29.82	22 52.0
32	9 33 48.87	+6.263	+15 43 24.6	−30.06	22 50.5

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	1″.9	1″.9	1″.9	1″.9	1″.9	2″.0
Hor. Parallax	3.4	3.4	3.4	3.4	3.4	3.4

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	9 33 48.87	+6.263	+15 43 24.6	−30.06	22 50.5
2	9 36 19.01	6.249	15 31 20.3	30.30	22 49.1
3	9 38 48.80	6.234	15 19 10.3	30.53	22 47.6
4	9 41 18.26	6.220	15 6 54.8	30.76	22 46.2
5	9 43 47.38	6.206	14 54 33.8	30.99	22 44.7
6	9 46 16.16	6.192	14 42 7.4	31.21	22 43.2
7	9 48 44.61	6.178	14 29 35.7	31.43	22 41.8
8	9 51 12.72	6.165	14 16 58.9	31.64	22 40.3
9	9 53 40.51	6.151	14 4 17.0	31.85	22 38.8
10	9 56 7.97	6.138	13 51 30.2	32.05	22 37.3
11	9 58 35.11	6.124	13 38 38.6	32.25	22 35.8
12	10 1 1.92	6.111	13 25 42.2	32.45	22 34.3
13	10 3 28.42	6.097	13 12 41.3	32.64	22 32.8
14	10 5 54.60	6.084	12 59 35.8	32.82	22 31.3
15	10 8 20.46	6.071	12 46 26.0	33.00	22 29.8
16	10 10 46.01	6.059	12 33 11.9	33.17	22 28.3
17	10 13 11.26	6.046	12 19 53.6	33.34	22 26.8
18	10 15 36.21	6.034	12 6 31.3	33.51	22 25.2
19	10 18 0.87	6.021	11 53 5.0	33.67	22 23.7
20	10 20 25.24	6.009	11 39 34.8	33.83	22 22.2
21	10 22 49.31	5.997	11 26 0.9	33.99	22 20.6
22	10 25 13.11	5.985	11 12 23.3	34.15	22 19.1
23	10 27 36.63	5.974	10 58 42.1	34.30	22 17.5
24	10 29 59.88	5.963	10 44 57.3	34.44	22 16.0
25	10 32 22.87	5.952	10 31 9.2	34.58	22 14.4
26	10 34 45.60	5.942	10 17 17.8	34.71	22 12.8
27	10 37 8.09	5.932	10 3 23.0	34.84	22 11.3
28	10 39 30.34	5.922	9 49 25.2	34.97	22 9.7
29	10 41 52.34	5.912	9 35 24.3	35.10	22 8.1
30	10 44 14.11	5.902	9 21 20.5	35.22	22 6.5
31	10 46 35.66	5.893	9 7 13.7	35.34	22 4.9
32	10 48 56.98	+5.884	+ 8 53 4.2	−35.46	22 3.4

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	2″.0	2″.0	2″.0	2″.0	2″.0	2″.0
Hor. Parallax	3.4	3.5	3.5	3.5	3.5	3.6

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	10 46 35.66	+5.893	+ 9 7 13.7	−35.34	22 4.9
2	10 48 56.98	5.884	8 53 4.2	35.46	22 3.4
3	10 51 18.08	5.875	8 38 52.0	35.57	22 1.8
4	10 53 38.97	5.866	8 24 37.2	35.67	22 0.2
5	10 55 59.65	5.857	8 10 19.9	35.77	21 58.6
6	10 58 20.12	5.849	7 56 0.2	35.87	21 57.0
7	11 0 40.38	5.840	7 41 38.3	35.96	21 55.4
8	11 3 0.45	5.832	7 27 14.1	36.05	21 53.7
9	11 5 20.31	5.824	7 12 47.9	36.13	21 52.1
10	11 7 39.98	5.816	6 58 19.8	36.21	21 50.5
11	11 9 59.47	5.808	6 43 49.9	36.28	21 48.9
12	11 12 18.78	5.801	6 29 18.2	36.35	21 47.3
13	11 14 37.90	5.793	6 14 44.7	36.42	21 45.7
14	11 16 56.84	5.785	6 0 9.8	36.49	21 44.0
15	11 19 15.60	5.778	5 45 33.5	36.55	21 42.4
16	11 21 34.20	5.771	5 30 55.9	36.60	21 40.8
17	11 23 52.63	5.764	5 16 17.0	36.65	21 39.1
18	11 26 10.90	5.758	5 1 36.9	36.69	21 37.5
19	11 28 29.01	5.752	4 46 55.8	36.73	21 35.8
20	11 30 46.98	5.746	4 32 13.6	36.77	21 34.2
21	11 33 4.81	5.740	4 17 30.6	36.81	21 32.6
22	11 35 22.50	5.734	4 2 46.8	36.84	21 30.9
23	11 37 40.05	5.729	3 48 2.2	36.87	21 29.3
24	11 39 57.49	5.724	3 33 17.0	36.90	21 27.6
25	11 42 14.82	5.719	3 18 31.2	36.92	21 26.0
26	11 44 32.03	5.715	3 3 44.9	36.94	21 24.3
27	11 46 49.13	5.711	2 48 58.2	36.96	21 22.6
28	11 49 6.14	5.707	2 34 11.2	36.97	21 21.0
29	11 51 23.05	5.703	2 19 23.9	36.98	21 19.3
30	11 53 39.88	5.700	2 4 36.4	36.98	21 17.7
31	11 55 56.63	5.696	1 49 48.9	36.98	21 16.0
32	11 58 13.29	+5.693	+ 1 35 1.4	−36.98	21 14.3

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.	33d.
Semidiameter	2″.1	2″.1	2″.1	2″.1	2″.1	2″.2	2″.2
Hor. Parallax	3.6	3.6	3.7	3.7	3.8	3.8	3.9

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 58 13.29	+5.693	+ 1 35 1.4	−36.98	21 14.3
2	12 0 29.87	5.690	1 20 14.0	36.97	21 12.7
3	12 2 46.38	5.687	1 5 26.8	36.96	21 11.0
4	12 5 2.82	5.684	0 50 39.9	36.94	21 9.3
5	12 7 19.19	5.681	0 35 53.5	36.92	21 7.7
6	12 9 35.50	5.678	0 21 7.6	36.90	21 6.0
7	12 11 51.75	5.676	+ 0 6 22.4	36.87	21 4.3
8	12 14 7.94	5.673	− 0 8 22.2	36.84	21 2.7
9	12 16 24.07	5.670	0 23 5.9	36.80	21 1.0
10	12 18 40.14	5.668	0 37 48.6	36.76	20 59.3
11	12 20 56.15	5.666	0 52 30.2	36.71	20 57.6
12	12 23 12.12	5.664	1 7 10.8	36.66	20 56.0
13	12 25 28.04	5.662	1 21 50.2	36.61	20 54.3
14	12 27 43.93	5.661	1 36 28.2	36.55	20 52.6
15	12 29 59.78	5.659	1 51 4.8	36.49	20 50.9
16	12 32 15.59	5.658	2 5 39.9	36.43	20 49.2
17	12 34 31.38	5.657	2 20 13.4	36.37	20 47.6
18	12 36 47.15	5.656	2 34 45.4	36.30	20 45.9
19	12 39 2.90	5.656	2 49 15.6	36.22	20 44.2
20	12 41 18.63	5.655	3 3 43.9	36.15	20 42.5
21	12 43 34.35	5.655	3 18 10.4	36.07	20 40.9
22	12 45 50.07	5.655	3 32 35.0	35.99	20 39.2
23	12 48 5.80	5.655	3 46 57.6	35.90	20 37.5
24	12 50 21.53	5.656	4 1 18.0	35.81	20 35.8
25	12 52 37.27	5.657	4 15 36.3	35.72	20 34.1
26	12 54 53.04	5.657	4 29 52.4	35.62	20 32.5
27	12 57 8.82	5.658	4 44 6.1	35.52	20 30.8
28	12 59 24.62	5.659	4 58 17.4	35.42	20 29.1
29	13 1 40.45	5.660	5 12 26.2	35.31	20 27.4
30	13 3 56.30	5.661	5 26 32.4	35.20	20 25.8
31	13 6 12.18	5.662	5 40 35.9	35.09	20 24.1
32	13 8 28.09	+5.663	− 5 54 36.5	−34.97	20 22.4

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	2″.2	2″.2	2″.3	2″.3	2″.4	2″.4
Hor. Parallax	3.9	3.9	4.0	4.0	4.1	4.2

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 6 12.18	+5.662	− 5 40 35.9	−35.09	20 24.1
2	13 8 28.09	5.663	5 54 36.5	34.97	20 22.4
3	13 10 44.03	5.665	6 8 34.3	34.85	20 20.7
4	13 13 0.00	5.666	6 22 29.1	34.72	20 19.1
5	13 15 16.00	5.668	6 36 20.9	34.59	20 17.4
6	13 17 32.04	5.669	6 50 9.5	34.46	20 15.7
7	13 19 48.12	5.671	7 3 54.8	34.32	20 14.0
8	13 22 4.22	5.672	7 17 36.7	34.17	20 12.4
9	13 24 20.35	5.673	7 31 15.1	34.02	20 10.7
10	13 26 36.52	5.674	7 44 49.9	33.87	20 9.0
11	13 28 52.72	5.676	7 58 21.0	33.72	20 7.4
12	13 31 8.95	5.677	8 11 48.4	33.56	20 5.7
13	13 33 25.22	5.679	8 25 12.1	33.40	20 4.0
14	13 35 41.52	5.681	8 38 31.8	33.24	20 2.3
15	13 37 57.87	5.682	8 51 47.4	33.07	20 0.7
16	13 40 14.26	5.684	9 4 59.1	32.90	19 59.0
17	13 42 30.69	5.686	9 18 6.7	32.73	19 57.3
18	13 44 47.16	5.688	9 31 10.1	32.55	19 55.7
19	13 47 3.68	5.690	9 44 9.2	32.37	19 54.0
20	13 49 20.25	5.693	9 57 4.0	32.19	19 52.4
21	13 51 36.88	5.695	10 9 54.4	32.01	19 50.7
22	13 53 53.57	5.697	10 22 40.4	31.83	19 49.0
23	13 56 10.32	5.700	10 35 22.0	31.64	19 47.4
24	13 58 27.13	5.702	10 47 59.0	31.45	19 45.7
25	14 0 43.99	5.705	11 0 31.3	31.25	19 44.0
26	14 3 0.92	5.707	11 12 58.9	31.05	19 42.4
27	14 5 17.90	5.709	11 25 21.7	30.85	19 40.7
28	14 7 34.93	5.712	11 37 39.7	30.65	19 39.1
29	14 9 52.02	5.714	11 49 52.7	30.44	19 37.4
30	14 12 9.17	5.716	12 2 0.6	30.23	19 35.8
31	14 14 26.37	5.718	12 14 3.4	30.01	19 34.1
32	14 16 43.62	+5.720	−12 26 1.0	−29.79	19 32.5

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter	2″.4	2″.5	2″.5	2″.6	2″.7	2″.7	2″.8
Hor. Parallax	4.3	4.4	4.5	4.6	4.7	4.8	4.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 7 22.50	+0.443	+0 37 29.5	−2.13	17 20.8
2	12 7 32.80	0.415	0 36 40.5	1.95	17 17.0
3	12 7 42.43	0.387	0 35 56.0	1.76	17 13.2
4	12 7 51.39	0.359	0 35 15.8	1.58	17 9.4
5	12 7 59.67	0.331	0 34 40.1	1.39	17 5.6
6	12 8 7.27	0.303	0 34 8.8	1.21	17 1.8
7	12 8 14.19	0.274	0 33 42.0	1.02	16 58.0
8	12 8 20.43	0.245	0 33 19.7	0.84	16 54.2
9	12 8 25.97	0.216	0 33 1.9	0.65	16 50.3
10	12 8 30.82	0.187	0 32 48.6	0.46	16 46.4
11	12 8 34.97	0.158	0 32 39.9	0.27	16 42.6
12	12 8 38.42	0.129	0 32 35.8	−0.08	16 38.7
13	12 8 41.17	0.100	0 32 36.3	+0.11	16 34.8
14	12 8 43.21	0.071	0 32 41.3	0.30	16 30.9
15	12 8 44.54	0.041	0 32 50.9	0.50	16 27.0
16	12 8 45.16	+0.011	0 33 5.1	0.69	16 23.1
17	12 8 45.07	−0.019	0 33 24.0	0.88	16 19.2
18	12 8 44.26	0.049	0 33 47.4	1.07	16 15.2
19	12 8 42.74	0.079	0 34 15.3	1.26	16 11.3
20	12 8 40.51	0.108	0 34 47.8	1.45	16 7.3
21	12 8 37.58	0.137	0 35 24.9	1.64	16 3.3
22	12 8 33.94	0.166	0 36 6.6	1.83	15 59.3
23	12 8 29.60	0.195	0 36 52.8	2.02	15 55.3
24	12 8 24.56	0.224	0 37 43.4	2.21	15 51.3
25	12 8 18.82	0.253	0 38 38.5	2.39	15 47.3
26	12 8 12.39	0.282	0 39 38.0	2.57	15 43.2
27	12 8 5.27	0.311	0 40 41.9	2.75	15 39.2
28	12 7 57.45	0.340	0 41 50.2	2.93	15 35.1
29	12 7 48.95	0.368	0 43 2.8	3.11	15 31.0
30	12 7 39.77	0.396	0 44 19.7	3.29	15 26.9
31	12 7 29.92	0.424	0 45 40.8	3.47	15 22.8
32	12 7 19.40	−0.452	+0 47 6.1	+3.64	15 18.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	18″.2	18″.7	19″.3	19″.8
Horizontal Parallax	1.7	1.8	1.8	1.9

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 7 19.40	−0.452	+0 47 6.1	+3.64	15 18.7
2	12 7 8.21	0.480	0 48 35.6	3.81	15 14.6
3	12 6 56.31	0.507	0 50 9.2	3.98	15 10.4
4	12 6 43.85	0.534	0 51 46.9	4.15	15 6.3
5	12 6 30.70	0.561	0 53 28.6	4.32	15 2.1
6	12 6 16.90	0.588	0 55 14.4	4.49	14 57.9
7	12 6 2.46	0.614	0 57 4.1	4.65	14 53.7
8	12 5 47.39	0.640	0 58 57.7	4.81	14 49.5
9	12 5 31.70	0.666	1 0 55.1	4.97	14 45.3
10	12 5 15.40	0.691	1 2 56.2	5.12	14 41.1
11	12 4 58.51	0.716	1 5 1.0	5.27	14 36.9
12	12 4 41.03	0.740	1 7 9.5	5.42	14 32.7
13	12 4 22.96	0.764	1 9 21.6	5.57	14 28.5
14	12 4 4.31	0.788	1 11 37.1	5.71	14 24.2
15	12 3 45.11	0.811	1 13 55.9	5.85	14 19.9
16	12 3 25.36	0.834	1 16 18.0	5.99	14 15.7
17	12 3 5.08	0.856	1 18 43.3	6.12	14 11.4
18	12 2 44.27	0.877	1 21 11.8	6.25	14 7.1
19	12 2 22.96	0.898	1 23 43.2	6.37	14 2.8
20	12 2 1.16	0.918	1 26 17.5	6.49	13 58.5
21	12 1 38.88	0.938	1 28 54.5	6.60	13 54.2
22	12 1 16.14	0.957	1 31 34.2	6.71	13 49.9
23	12 0 52.95	0.975	1 34 16.5	6.81	13 45.6
24	12 0 29.34	0.993	1 37 1.2	6.91	13 41.3
25	12 0 5.32	1.010	1 39 48.2	7.00	13 37.0
26	11 59 40.90	1.026	1 42 37.4	7.09	13 32.6
27	11 59 16.11	1.041	1 45 28.7	7.17	13 28.2
28	11 58 50.95	1.056	1 48 22.0	7.25	13 23.9
29	11 58 25.45	1.070	1 51 17.1	7.33	13 19.6
30	11 57 59.62	1.083	1 54 14.0	7.40	13 15.2
31	11 57 33.47	1.096	1 57 12.5	7.46	13 10.8
32	11 57 7.02	−1.108	+2 0 12.5	+7.52	13 6.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	19″.9	20″.3	20″.7	21″.0
Horizontal Parallax	1.9	1.9	1.9	2.0

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 58 25.45	−1.070	+1 51 17.1	+7.33	13 19.6
2	11 57 59.62	1.083	1 54 14.0	7.40	13 15.2
3	11 57 33.47	1.096	1 57 12.5	7.46	13 10.8
4	11 57 7.02	1.108	2 0 12.5	7.52	13 6.5
5	11 56 40.30	1.119	2 3 13.9	7.58	13 2.1
6	11 56 13.33	1.129	2 6 16.5	7.63	12 57.7
7	11 55 46.12	1.138	2 9 20.3	7.67	12 53.3
8	11 55 18.69	1.147	2 12 25.1	7.71	12 48.9
9	11 54 51.05	1.155	2 15 30.8	7.75	12 44.5
10	11 54 23.22	1.162	2 18 37.3	7.78	12 40.1
11	11 53 55.23	1.169	2 21 44.3	7.80	12 35.7
12	11 53 27.10	1.175	2 24 51.8	7.82	12 31.3
13	11 52 58.85	1.180	2 27 59.7	7.83	12 26.9
14	11 52 30.49	1.184	2 31 7.8	7.84	12 22.5
15	11 52 2.05	1.187	2 34 16.0	7.64	12 18.1
16	11 51 33.55	1.189	2 37 24.1	7.83	12 13.7
17	11 51 5.01	1.190	2 40 32.0	7.82	12 9.3
18	11 50 36.44	1.190	2 43 39.5	7.80	12 4.9
19	11 50 7.90	1.189	2 46 46.6	7.78	12 0.5
20	11 49 39.37	1.187	2 49 53.1	7.75	11 56.1
21	11 49 10.88	1.185	2 52 58.8	7.72	11 51.7
22	11 48 42.46	1.182	2 56 3.5	7.68	11 47.3
23	11 48 14.13	1.178	2 59 7.2	7.63	11 42.9
24	11 47 45.90	1.173	3 2 9.8	7.58	11 38.5
25	11 47 17.80	1.167	3 5 11.1	7.52	11 34.1
26	11 46 49.86	1.160	3 8 10.9	7.46	11 29.7
27	11 46 22.09	1.153	3 11 9.2	7.39	11 25.3
28	11 45 54.51	1.145	3 14 5.8	7.32	11 20.9
29	11 45 27.13	1.136	3 17 0.6	7.24	11 16.5
30	11 44 59.97	1.126	3 19 53.6	7.16	11 12.1
31	11 44 33.06	1.116	3 22 44.5	7.07	11 7.8
32	11 44 6.40	−1.105	+3 25 33.2	+6.98	11 3.4

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	21″.0	21″.1	21″.1	21″.0
Horizontal Parallax	2.0	2.0	2.0	2.0

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 44 6.40	−1.105	+3 25 33.2	+6.98	11 3.4
2	11 43 40.01	1.094	3 28 19.7	6.89	10 59.0
3	11 43 13.92	1.082	3 31 3.9	6.79	10 54.6
4	11 42 48.14	1.069	3 33 45.6	6.69	10 50.3
5	11 42 22.69	1.055	3 36 24.8	6.58	10 45.9
6	11 41 57.58	1.040	3 39 1.4	6.47	10 41.5
7	11 41 32.82	1.025	3 41 35.2	6.35	10 37.2
8	11 41 8.43	1.009	3 44 6.2	6.23	10 32.9
9	11 40 44.43	0.992	3 46 34.3	6.11	10 28.5
10	11 40 20.83	0.974	3 48 59.4	5.98	10 24.2
11	11 39 57.66	0.956	3 51 21.5	5.85	10 19.9
12	11 39 34.92	0.938	3 53 40.4	5.71	10 15.6
13	11 39 12.63	0.919	3 55 56.0	5.57	10 11.3
14	11 38 50.81	0.899	3 58 8.2	5.43	10 7.0
15	11 38 29.48	0.879	4 0 17.1	5.29	10 2.7
16	11 38 8.64	0.858	4 2 22.4	5.14	9 58.5
17	11 37 48.30	0.837	4 4 24.1	4.99	9 54.2
18	11 37 28.48	0.815	4 6 22.1	4.84	9 49.9
19	11 37 9.19	0.792	4 8 16.3	4.68	9 45.7
20	11 36 50.45	0.769	4 10 6.7	4.52	9 41.5
21	11 36 32.26	0.746	4 11 53.2	4.36	9 37.3
22	11 36 14.63	0.722	4 13 35.8	4.20	9 33.1
23	11 35 57.58	0.698	4 15 14.4	4.03	9 28.9
24	11 35 41.10	0.674	4 16 49.0	3.86	9 24.7
25	11 35 25.21	0.649	4 18 19.6	3.69	9 20.5
26	11 35 9.92	0.624	4 19 46.1	3.52	9 16.3
27	11 34 55.24	0.599	4 21 8.4	3.34	9 12.1
28	11 34 41.16	0.574	4 22 26.6	3.17	9 8.0
29	11 34 27.70	0.548	4 23 40.6	3.00	9 3.8
30	11 34 14.86	0.522	4 24 50.4	2.82	8 59.7
31	11 34 2.65	0.496	4 25 56.0	2.64	8 55.6
32	11 33 51.07	−0.470	+4 26 57.3	+2.47	8 51.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	21″.0	20″.7	20″.4	19″.9
Horizontal Parallax	2.0	2.0	1.9	1.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

	MAY.						JUNE.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	11 34 2.65	−0.496	+4 25 56.0	+2.64	8 55.6	1	11 33 9.90	+0.354	+4 23 59.6	−2.91	6 52.9
2	11 33 57.07	0.470	4 26 57.3	2.47	8 51.5	2	11 33 18.70	0.380	4 22 47.8	3.08	6 49.1
3	11 33 40.13	0.443	4 27 54.4	2.29	8 47.4	3	11 33 28.13	0.406	4 21 31.9	3.25	6 45.3
4	11 33 29.82	0.416	4 28 47.2	2.11	8 43.3	4	11 33 38.18	0.432	4 20 12.1	3.42	6 41.5
5	11 33 20.16	0.389	4 29 35.7	1.93	8 39.2	5	11 33 48.86	0.458	4 18 48.3	3.58	6 37.7
6	11 33 11.14	0.362	4 30 19.8	1.75	8 35.1	6	11 34 0.15	0.483	4 17 20.5	3.74	6 34.0
7	11 33 2.77	0.335	4 30 59.6	1.57	8 31.0	7	11 34 12.06	0.509	4 15 48.8	3.90	6 30.3
8	11 32 55.06	0.308	4 31 35.1	1.39	8 26.9	8	11 34 24.58	0.534	4 14 13.2	4.06	6 26.6
9	11 32 48.01	0.280	4 32 6.2	1.20	8 22.9	9	11 34 37.71	0.559	4 12 33.8	4.22	6 22.9
10	11 32 41.62	0.252	4 32 32.9	1.02	8 18.9	10	11 34 51.44	0.584	4 10 50.6	4.38	6 19.2
11	11 32 35.90	0.224	4 32 55.2	0.84	8 14.8	11	11 35 5.76	0.609	4 9 3.5	4.54	6 15.5
12	11 32 30.85	0.197	4 33 13.1	0.66	8 10.8	12	11 35 20.67	0.634	4 7 12.6	4.70	6 11.8
13	11 32 26.46	0.169	4 33 26.7	0.47	8 6.8	13	11 35 36.17	0.659	4 5 18.0	4.85	6 8.1
14	11 32 22.74	0.141	4 33 35.9	0.29	8 2.8	14	11 35 52.27	0.683	4 3 19.8	5.00	6 4.5
15	11 32 19.70	0.113	4 33 40.6	+0.10	7 58.9	15	11 36 8.95	0.707	4 1 17.8	5.15	6 0.9
16	11 32 17.32	0.085	4 33 41.0	−0.08	7 54.9	16	11 36 26.20	0.731	3 59 12.2	5.30	5 57.2
17	11 32 15.62	0.057	4 33 37.0	0.26	7 51.0	17	11 36 44.01	0.754	3 57 3.0	5.45	5 53.6
18	11 32 14.59	0.029	4 33 28.7	0.45	7 47.0	18	11 37 2.38	0.777	3 54 50.1	5.60	5 50.0
19	11 32 14.24	−0.001	4 33 15.9	0.63	7 43.1	19	11 37 21.31	0.800	3 52 33.7	5.75	5 46.4
20	11 32 14.55	+0.027	4 32 58.8	0.81	7 39.1	20	11 37 40.79	0.823	3 50 13.9	5.90	5 42.8
21	11 32 15.54	0.055	4 32 37.2	0.99	7 35.2	21	11 38 0.81	0.846	3 47 50.6	6.04	5 39.2
22	11 32 17.20	0.083	4 32 11.3	1.17	7 31.3	22	11 38 21.38	0.868	3 45 24.0	6.18	5 35.6
23	11 32 19.52	0.111	4 31 41.1	1.35	7 27.4	23	11 38 42.48	0.890	3 42 53.9	6.32	5 32.0
24	11 32 22.51	0.139	4 31 6.6	1.53	7 23.5	24	11 39 4.10	0.912	3 40 20.5	6.46	5 28.4
25	11 32 26.15	0.166	4 30 27.8	1.70	7 19.6	25	11 39 26.24	0.934	3 37 43.8	6.60	5 24.8
26	11 32 30.46	0.193	4 29 44.8	1.88	7 15.8	26	11 39 48.88	0.956	3 35 4.0	6.73	5 21.3
27	11 32 35.42	0.220	4 28 57.6	2.06	7 11.9	27	11 40 12.03	0.977	3 32 20.9	6.86	5 17.8
28	11 32 41.03	0.247	4 28 6.2	2.23	7 8.1	28	11 40 35.68	0.997	3 29 34.6	6.99	5 14.2
29	11 32 47.29	0.274	4 27 10.7	2.40	7 4.3	29	11 40 59.82	1.017	3 26 45.2	7.12	5 10.6
30	11 32 54.19	0.301	4 26 11.1	2.57	7 0.5	30	11 41 24.46	1.037	3 23 52.7	7.25	5 7.1
31	11 33 1.73	0.328	4 25 7.4	2.74	6 56.7	31	11 41 49.59	1.057	3 20 57.2	7.38	5 3.6
32	11 33 9.90	+0.354	+4 23 59.6	−2.91	6 52.9	32	11 42 15.20	+1.077	+3 17 58.7	−7.51	5 0.1

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	19″.9	19″.4	18″.8	18″.3	Polar Semidiameter	18″.2	17″.7	17″.2	16″.7
Horizontal Parallax	1.9	1.8	1.8	1.7	Horizontal Parallax	1.7	1.7	1.6	1.6

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 41 49.59	+1.057	+3 20 57.2	− 7.38	5 3.6
2	11 42 15.20	1.077	3 17 58.7	7.51	5 0.1
3	11 42 41.27	1.096	3 14 57.2	7.63	4 56.6
4	11 43 7.80	1.115	3 11 52.7	7.75	4 53.1
5	11 43 34.80	1.134	3 8 45.3	7.87	4 49.6
6	11 44 2.26	1.153	3 5 35.0	7.99	4 46.1
7	11 44 30.17	1.172	3 2 21.8	8.11	4 42.6
8	11 44 58.53	1.191	2 59 5.9	8.22	4 39.2
9	11 45 27.34	1.209	2 55 47.2	8.34	4 35.8
10	11 45 56.58	1.227	2 52 25.7	8.45	4 32.3
11	11 46 26.25	1.245	2 49 1.5	8.56	4 28.8
12	11 46 56.34	1.263	2 45 34.6	8.67	4 25.4
13	11 47 26.86	1.280	2 42 5.1	8.78	4 22.0
14	11 47 57.79	1.297	2 38 32.9	8.89	4 18.6
15	11 48 29.13	1.314	2 34 58.1	9.00	4 15.2
16	11 49 0.87	1.331	2 31 20.8	9.10	4 11.8
17	11 49 33.02	1.347	2 27 41.1	9.21	4 8.4
18	11 50 5.56	1.363	2 23 58.9	9.31	4 5.0
19	11 50 38.48	1.379	2 20 14.3	9.41	4 1.6
20	11 51 11.78	1.395	2 16 27.3	9.51	3 58.2
21	11 51 45.45	1.410	2 12 38.0	9.61	3 54.8
22	11 52 19.48	1.425	2 8 46.4	9.70	3 51.4
23	11 52 53.88	1.440	2 4 52.6	9.79	3 48.0
24	11 53 28.63	1.455	2 0 56.6	9.88	3 44.7
25	11 54 3.73	1.469	1 56 58.5	9.97	3 41.4
26	11 54 39.17	1.483	1 52 58.2	10.06	3 38.0
27	11 55 14.95	1.497	1 48 55.8	10.15	3 34.7
28	11 55 51.06	1.511	1 44 51.3	10.23	3 31.4
29	11 56 27.50	1.524	1 40 44.8	10.31	3 28.1
30	11 57 4.26	1.537	1 36 36.3	10.39	3 24.8
31	11 57 41.34	1.550	1 32 25.9	10.47	3 21.5
32	11 58 18.73	+1.563	+1 28 13.6	−10.55	3 18.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	16″.7	16″.3	15″.9	15″.6
Horizontal Parallax	1.6	1.5	1.5	1.5

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 58 18.73	+1.563	+1 28 13.6	−10.55	3 18.2
2	11 58 56.43	1.576	1 23 59.4	10.63	3 14.9
3	11 59 34.44	1.589	1 19 43.3	10.71	3 11.6
4	12 0 12.75	1.601	1 15 25.4	10.78	3 8.3
5	12 0 51.36	1.613	1 11 5.8	10.85	3 5.0
6	12 1 30.25	1.625	1 6 44.4	10.93	3 1.7
7	12 2 9.43	1.637	1 2 21.3	11.00	2 58.4
8	12 2 48.89	1.649	0 57 56.4	11.07	2 55.1
9	12 3 28.63	1.661	0 53 29.8	11.14	2 51.8
10	12 4 8.64	1.672	0 49 1.5	11.21	2 48.6
11	12 4 48.92	1.683	0 44 31.7	11.28	2 45.3
12	12 5 29.46	1.694	0 40 0.4	11.34	2 42.0
13	12 6 10.27	1.705	0 35 27.5	11.40	2 38.8
14	12 6 51.33	1.715	0 30 53.1	11.46	2 35.6
15	12 7 32.64	1.725	0 26 17.3	11.52	2 32.3
16	12 8 14.19	1.735	0 21 40.1	11.58	2 29.1
17	12 8 55.96	1.745	0 17 1.5	11.64	2 25.8
18	12 9 37.96	1.755	0 12 21.6	11.70	2 22.6
19	12 10 20.19	1.764	0 7 40.4	11.75	2 19.3
20	12 11 2.64	1.773	+0 2 58.0	11.80	2 16.1
21	12 11 45.31	1.782	−0 1 45.6	11.85	2 12.9
22	12 12 28.19	1.791	0 6 30.5	11.90	2 9.7
23	12 13 11.27	1.800	0 11 16.5	11.95	2 6.5
24	12 13 54.56	1.808	0 16 3.7	11.99	2 3.3
25	12 14 38.04	1.816	0 20 51.9	12.03	2 0.1
26	12 15 21.72	1.824	0 25 41.1	12.07	1 56.9
27	12 16 5.59	1.832	0 30 31.4	12.11	1 53.7
28	12 16 49.65	1.840	0 35 22.6	12.15	1 50.5
29	12 17 33.88	1.847	0 40 14.8	12.19	1 47.3
30	12 18 18.29	1.854	0 45 7.9	12.23	1 44.1
31	12 19 2.88	1.861	0 50 1.9	12.27	1 40.9
32	12 19 47.64	+1.868	−0 54 56.8	−12.31	1 37.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	15″.6	15″.3	15″.0	14″.8
Horizontal Parallax	1.5	1.4	1.4	1.4

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 19 47.64	+1.868	−0 54 56.8	−12.31	1 37.7
2	12 20 32.56	1.875	0 59 52.4	12.34	1 34.5
3	12 21 17.64	1.882	1 4 48.9	12.37	1 31.3
4	12 22 2.88	1.888	1 9 46.2	12.40	1 28.1
5	12 22 48.28	1.894	1 14 44.2	12.43	1 24.9
6	12 23 33.82	1.900	1 19 42.9	12.46	1 21.7
7	12 24 19.51	1.906	1 24 42.3	12.49	1 18.6
8	12 25 5.34	1.912	1 29 42.4	12.52	1 15.4
9	12 25 51.31	1.918	1 34 43.1	12.54	1 12.2
10	12 26 38.41	1.924	1 39 44.4	12.56	1 9.0
11	12 27 23.63	1.929	1 44 46.3	12.58	1 5.9
12	12 28 9.98	1.934	1 49 48.6	12.60	1 2.7
13	12 28 56.45	1.939	1 54 51.4	12.62	0 59.6
14	12 29 43.03	1.944	1 59 54.6	12.64	0 56.4
15	12 30 29.72	1.948	2 4 58.2	12.66	0 53.3
16	12 31 16.51	1.952	2 10 2.1	12.67	0 50.1
17	12 32 3.40	1.956	2 15 6.4	12.68	0 47.0
18	12 32 50.38	1.960	2 20 10.9	12.69	0 43.8
19	12 33 37.45	1.964	2 25 15.7	12.70	0 40.7
20	12 34 24.60	1.967	2 30 20.7	12.71	0 37.5
21	12 35 11.84	1.970	2 35 25.8	12.72	0 34.4
22	12 35 59.16	1.973	2 40 31.0	12.72	0 31.2
23	12 36 46.55	1.976	2 45 36.3	12.72	0 28.1
24	12 37 34.00	1.979	2 50 41.8	12.73	0 24.9
25	12 38 21.52	1.981	2 55 47.3	12.73	0 21.8
26	12 39 9.10	1.983	3 0 52.8	12.73	0 18.6
27	12 39 56.74	1.985	3 5 58.3	13.73	0 15.5
28	12 40 44.43	1.987	3 11 3.8	12.73	0 12.4
29	12 41 32.17	1.989	3 16 9.3	12.72	0 9.2
30	12 42 19.96	1.991	3 21 14.6	12.72	0 6.1
31	12 43 7.79	1.993	3 26 19.8	12.72	0 3.0 23 59.9
32	12 43 55.66	+1.995	−3 31 24.9	−12.71	23 56.8

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	14″.8	14″.7	14″.6	14″.6
Horizontal Parallax	1.4	1.4	1.4	1.4

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 43 7.79	+1.993	−3 26 19.8	−12.72	0 3.0 23 59.9
2	12 43 55.66	1.995	3 31 24.9	12.71	23 56.8
3	12 44 43.56	1.996	3 36 29.8	12.70	23 53.6
4	12 45 31.50	1.997	3 41 34.5	12.69	23 50.5
5	12 46 19.47	1.998	3 46 38.9	12.68	23 47.3
6	12 47 7.45	1.999	3 51 43.1	12.67	23 44.2
7	12 47 55.45	2.000	3 56 46.9	12.66	23 41.0
8	12 48 43.46	2.001	4 1 50.3	12.64	23 37.9
9	12 49 31.49	2.001	4 6 53.4	12.62	23 34.7
10	12 50 19.52	2.001	4 11 56.1	12.60	23 31.6
11	12 51 7.54	2.001	4 16 58.2	12.58	23 28.4
12	12 51 55.55	2.000	4 21 59.8	12.56	23 25.3
13	12 52 43.54	1.999	4 27 0.9	12.54	23 22.2
14	12 53 31.51	1.998	4 32 1.4	12.52	23 19.0
15	12 54 19.46	1.997	4 37 1.3	12.49	23 15.9
16	12 55 7.38	1.996	4 42 0.6	12.46	23 12.7
17	12 55 55.27	1.995	4 46 59.2	12.43	23 9.6
18	12 56 43.13	1.993	4 51 57.0	12.40	23 6.4
19	12 57 30.95	1.991	4 56 54.1	12.37	23 3.3
20	12 58 18.71	1.989	5 1 50.4	12.34	23 0.2
21	12 59 6.41	1.987	5 6 46.0	12.30	22 57.1
22	12 59 54.05	1.985	5 11 40.6	12.26	22 53.9
23	13 0 41.63	1.982	5 16 34.4	12.22	22 50.8
24	13 1 29.16	1.979	5 21 27.2	12.18	22 47.6
25	13 2 16.62	1.976	5 26 19.2	12.14	22 44.5
26	13 3 4.01	1.973	5 31 10.2	12.10	22 41.3
27	13 3 51.32	1.970	5 36 0.2	12.06	22 38.2
28	13 4 38.55	1.966	5 40 49.1	12.02	22 35.0
29	13 5 25.70	1.962	5 45 37.1	11.98	22 31.9
30	13 6 12.75	1.958	5 50 24.0	11.94	22 28.7
31	13 6 59.70	1.954	5 55 9.7	11.89	22 25.6
32	13 7 46.55	+1.950	−5 59 54.3	−11.84	22 22.4

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	14″.6	14″.6	14″.7	14″.8
Horizontal Parallax	1.4	1.4	1.4	1.4

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 7 46.55	+1.950	−5 59 54.3	−11.84	22 22.4
2	13 8 33.30	1.945	6 4 37.8	11.79	22 19.3
3	13 9 19.93	1.940	6 9 20.0	11.74	22 16.1
4	13 10 6.45	1.935	6 14 1.0	11.69	22 13.0
5	13 10 52.86	1.930	6 18 40.7	11.63	22 9.8
6	13 11 39.14	1.925	6 23 19.1	11.57	22 6.6
7	13 12 25.28	1.919	6 27 56.1	11.51	22 3.5
8	13 13 11.27	1.913	6 32 31.7	11.45	22 0.3
9	13 13 57.11	1.907	6 37 5.9	11.39	21 57.1
10	13 14 42.81	1.901	6 41 38.6	11.33	21 53.9
11	13 15 28.28	1.894	6 46 9.8	11.27	21 50.8
12	13 16 13.70	1.887	6 50 39.4	11.20	21 47.6
13	13 16 58.93	1.880	6 55 7.5	11.13	21 44.4
14	13 17 43.96	1.873	6 59 34.0	11.06	21 41.2
15	13 18 28.80	1.865	7 3 58.8	10.99	21 38.0
16	13 19 13.45	1.857	7 8 22.0	10.92	21 34.8
17	13 19 57.91	1.849	7 12 43.3	10.85	21 31.6
18	13 20 42.17	1.841	7 17 2.9	10.78	21 28.4
19	13 21 26.23	1.832	7 21 20.8	10.71	21 25.2
20	13 22 10.08	1.823	7 25 36.9	10.63	21 22.0
21	13 22 53.71	1.814	7 29 51.1	10.55	21 18.8
22	13 23 37.13	1.805	7 34 3.5	10.43	21 15.6
23	13 24 20.32	1.795	7 38 14.0	10.40	21 12.4
24	13 25 3.28	1.785	7 42 22.5	10.32	21 9.2
25	13 25 46.00	1.775	7 46 29.2	10.24	21 6.0
26	13 26 28.48	1.765	7 50 33.9	10.16	21 2.7
27	13 27 10.71	1.754	7 54 36.6	10.08	20 59.5
28	13 27 52.68	1.743	7 58 37.2	9.99	20 56.2
29	13 28 34.39	1.732	8 2 35.8	9.90	20 53.0
30	13 29 15.84	1.721	8 6 32.3	9.81	20 49.7
31	13 29 57.01	1.709	8 10 26.7	9.72	20 46.5
32	13 30 37.90	+1.697	−8 14 18.9	− 9.63	20 43.2

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 29 57.01	+1.709	−8 10 26.7	−9.72	20 46.5
2	13 30 37.90	1.697	8 14 18.9	9.63	20 43.2
3	13 31 18.51	1.685	8 18 8.9	9.54	20 39.9
4	13 31 58.83	1.673	8 21 56.7	9.45	20 36.6
5	13 32 38.84	1.660	8 25 42.1	9.35	20 33.4
6	13 33 18.54	1.647	8 29 25.2	9.25	20 30.1
7	13 33 57.92	1.634	8 33 5.9	9.15	20 26.8
8	13 34 36.98	1.620	8 36 44.3	9.05	20 23.5
9	13 35 15.71	1.606	8 40 20.2	8.95	20 20.2
10	13 35 54.10	1.592	8 43 53.6	8.85	20 16.9
11	13 36 32.15	1.578	8 47 24.6	8.74	20 13.6
12	13 37 9.84	1.563	8 50 53.2	8.64	20 10.3
13	13 37 47.17	1.548	8 54 19.1	8.53	20 7.0
14	13 38 24.14	1.533	8 57 42.4	8.42	20 3.7
15	13 39 0.73	1.517	9 1 3.2	8.31	20 0.4
16	13 39 36.94	1.501	9 4 21.4	8.20	19 57.0
17	13 40 12.76	1.485	9 7 36.9	8.09	19 53.7
18	13 40 48.20	1.468	9 10 49.7	7.98	19 50.4
19	13 41 23.24	1.451	9 13 59.7	7.86	19 47.0
20	13 41 57.87	1.434	9 17 7.0	7.75	19 43.6
21	13 42 32.09	1.417	9 20 11.5	7.63	19 40.3
22	13 43 5.89	1.399	9 23 13.2	7.51	19 36.9
23	13 43 39.26	1.381	9 26 12.1	7.39	19 33.5
24	13 44 12.21	1.363	9 29 8.1	7.27	19 30.1
25	13 44 44.72	1.345	9 32 1.3	7.15	19 26.7
26	13 45 16.79	1.326	9 34 51.5	7.03	19 23.3
27	13 45 48.40	1.307	9 37 38.7	6.91	19 19.9
28	13 46 19.55	1.288	9 40 23.0	6.79	19 16.4
29	13 46 50.23	1.269	9 43 4.3	6.66	19 13.0
30	13 47 10.44	1.249	9 45 42.6	6.53	19 9.6
31	13 47 50.17	1.228	9 48 17.8	6.40	19 6.1
32	13 48 19.41	+1.208	−9 50 50.0	−6.27	19 2.6

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	14″.8	14″.9	15″.1	15″.4
Horizontal Parallax	1.4	1.4	1.4	1.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	15″.4	15″.8	16″.1	16″.5
Horizontal Parallax	1.5	1.5	1.5	1.6

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	20 18 50.32	+1.183	−20 6 40.0	+3.74	1 34.7	1	20 33 57.48	+1.223	−19 16 35.7	+4.23	23 44.4
2	20 19 18.76	1.187	20 5 10.0	3.76	1 31.3	2	20 34 26.80	1.221	19 14 54.2	4.23	23 41.0
3	20 19 47.30	1.191	20 3 39.5	3.78	1 27.8	3	20 34 56.08	1.219	19 13 12.5	4.24	23 37.6
4	20 20 15.94	1.195	20 2 8.4	3.81	1 24.4	4	20 35 25.31	1.217	19 11 30.6	4.25	23 34.1
5	20 20 44.67	1.199	20 0 36.7	3.83	1 20.9	5	20 35 54.48	1.214	19 9 48.6	4.25	23 30.7
6	20 21 13.49	1.202	19 59 4.4	3.86	1 17.5	6	20 36 23.59	1.211	19 8 6.6	4.25	23 27.2
7	20 21 42.39	1.206	19 57 31.6	3.88	1 14.0	7	20 36 52.63	1.209	19 6 24.6	4.25	23 23.8
8	20 22 11.37	1.209	19 55 58.3	3.90	1 10.5	8	20 37 21.61	1.206	19 4 42.7	4.25	23 20.3
9	20 22 40.42	1.212	19 54 24.4	3.92	1 7.1	9	20 37 50.52	1.203	19 3 0.8	4.24	23 16.9
10	20 23 9.54	1.215	19 52 50.0	3.95	1 3.6	10	20 38 19.35	1.199	19 1 19.0	4.24	23 13.4
11	20 23 38.73	1.218	19 51 15.0	3.97	1 0.2	11	20 38 48.09	1.196	18 59 37.2	4.24	23 9.9
12	20 24 7.98	1.220	19 49 39.5	3.99	0 56.7	12	20 39 16.74	1.192	18 57 55.4	4.24	23 6.5
13	20 24 37.28	1.222	19 48 3.6	4.00	0 53.3	13	20 39 45.30	1.188	18 56 13.7	4.24	23 3.0
14	20 25 6.63	1.224	19 46 27.3	4.02	0 49.9	14	20 40 13.76	1.184	18 54 32.1	4.23	22 59.6
15	20 25 36.02	1.225	19 44 50.6	4.04	0 46.4	15	20 40 42.12	1.179	18 52 50.6	4.23	22 56.1
16	20 26 5.44	1.227	19 43 13.4	4.06	0 43.0	16	20 41 10.37	1.175	18 51 9.3	4.22	22 52.6
17	20 26 34.89	1.228	19 41 35.8	4.07	0 39.5	17	20 41 38.50	1.170	18 49 28.2	4.21	22 49.2
18	20 27 4.37	1.229	19 39 57.8	4.09	0 36.1	18	20 42 6.52	1.165	18 47 47.3	4.20	22 45.7
19	20 27 33.89	1.231	19 38 19.5	4.10	0 32.6	19	20 42 34.42	1.160	18 46 6.6	4.19	22 42.2
20	20 28 3.44	1.232	19 36 40.8	4.12	0 29.2	20	20 43 2.20	1.155	18 44 26.1	4.18	22 38.8
21	20 28 33.01	1.232	19 35 1.7	4.14	0 25.8	21	20 43 29.85	1.149	18 42 45.9	4.17	22 35.3
22	20 29 2.58	1.232	19 33 22.3	4.15	0 22.3	22	20 43 57.36	1.143	18 41 6.0	4.16	22 31.8
23	20 29 32.14	1.231	19 31 42.6	4.16	0 18.9	23	20 44 24.73	1.137	18 39 26.4	4.14	22 28.3
24	20 30 1.69	1.231	19 30 2.7	4.17	0 15.4	24	20 44 51.95	1.131	18 37 47.2	4.13	22 24.8
25	20 30 31.23	1.231	19 28 22.6	4.18	0 12.0	25	20 45 19.02	1.125	18 36 8.3	4.11	22 21.4
26	20 31 0.76	1.230	19 26 42.2	4.19	0 8.5	26	20 45 45.93	1.118	18 34 29.8	4.10	22 17.9
27	20 31 30.27	1.229	19 25 1.5	4.20	0 5.1	27	20 46 12.69	1.112	18 32 51.7	4.08	22 14.4
28	20 31 59.77	1.229	19 23 20.6	4.21	0 1.7 23 58.2	28	20 46 39.29	1.105	18 31 14.0	4.06	22 10.9
29	20 32 29.25	1.228	19 21 39.6	4.21	23 54.8	29	20 47 5.73	1.098	18 29 36.8	4.04	22 7.4
30	20 32 58.70	1.226	19 19 58.4	4.22	23 51.3	30	20 47 32.00	1.091	18 28 0.0	4.02	22 3.9
31	20 33 28.11	1.225	19 18 17.1	4.22	23 47.9	31	20 47 58.09	1.084	18 26 23.7	4.00	22 0.4
32	20 33 57.48	+1.223	−19 16 35.7	+4.23	23 44.4	32	20 48 24.01	+1.076	−18 24 47.9	+3.98	21 56.9

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7.″2	7.″2	7.″1	7.″1	Polar Semidiameter	7.″1	7.″2	7.″2	7.″3
Horizontal Parallax	0.8	0.8	0.8	0.8	Horizontal Parallax	0.8	0.8	0.8	0.8

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 47 5.73	+1.098	−18 29 36.8	+4.04	22 7.4
2	20 47 32.00	1.091	18 28 0.0	4.02	22 3.9
3	20 47 58.09	1.084	18 26 23.7	4.00	22 0.4
4	20 48 24.01	1.076	18 24 47.9	3.98	21 56.9
5	20 48 49.75	1.069	18 23 12.6	3.96	21 53.4
6	20 49 15.31	1.061	18 21 37.8	3.94	21 49.9
7	20 49 40.68	1.053	18 20 3.5	3.92	21 46.3
8	20 50 5.86	1.045	18 18 29.8	3.89	21 42.8
9	20 50 30.84	1.037	18 16 56.7	3.86	21 39.3
10	20 50 55.62	1.028	18 15 24.3	3.84	21 35.8
11	20 51 20.20	1.020	18 13 52.6	3.81	21 32 2
12	20 51 44.57	1.011	18 12 21.6	3.78	21 28.7
13	20 52 8.72	1.002	18 10 51.2	3.75	21 25.2
14	20 52 32.65	0.993	18 9 21.5	3.72	21 21.6
15	20 52 56.37	0.984	18 7 52.6	3.69	21 18.1
16	20 53 19.87	0.974	18 6 24.4	3.66	21 14.6
17	20 53 43.14	0.965	18 4 57.0	3.62	21 11.0
18	20 54 6.17	0.955	18 3 30.4	3.59	21 7.5
19	20 54 28.96	0.944	18 2 4.6	3.56	21 3.9
20	20 54 51.50	0.934	18 0 39.7	3.52	21 0.3
21	20 55 13.79	0.923	17 59 15.7	3.48	20 56.8
22	20 55 35.83	0.913	17 57 52.6	3.44	20 53.2
23	20 55 57.62	0.902	17 56 30.4	3.40	20 49.6
24	20 56 19.15	0.891	17 55 9.2	3.36	20 46.0
25	20 56 40.41	0.880	17 53 48.9	3.32	20 42.5
26	20 57 1.41	0.869	17 52 29.6	3.28	20 38.9
27	20 57 22.14	0.858	17 51 11.3	3.24	20 35.3
28	20 57 42.60	0.847	17 49 54.0	3.20	20 31.7
29	20 58 2.79	0.835	17 48 37.8	3.15	20 28.1
30	20 58 22.70	0.824	17 47 22.7	3.11	20 24.5
31	20 58 42.32	0.812	17 46 8.7	3.06	20 20.9
32	20 59 1.66	+0.800	−17 44 55.7	+3.02	20 17.3

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.2	7″.3	7″.4	7″.5
Horizontal Parallax	0.8	0.8	0.8	0.8

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 59 1.66	+0.800	−17 44 55.7	+3.02	20 17.3
2	20 59 20.71	0.788	17 43 43.8	2.97	20 13.7
3	20 59 39.47	0.776	17 42 33.0	2.92	20 10.0
4	20 59 57.94	0.764	17 41 23.4	2.87	20 6.4
5	21 0 16.12	0.751	17 40 15.1	2.82	20 2.8
6	21 0 33.99	0.738	17 39 8.0	2.77	19 59.1
7	21 0 51.55	0.725	17 38 2.1	2.72	19 55.5
8	21 1 8.81	0.713	17 36 57.4	2.67	19 51.8
9	21 1 25.76	0.700	17 35 54.0	2.62	19 48.2
10	21 1 42.39	0.686	17 34 51.8	2.56	19 44.5
11	21 1 58.71	0.673	17 33 50.9	2.51	19 40.9
12	21 2 14.71	0.660	17 32 51.3	2.46	19 37.2
13	21 2 30.38	0.646	17 31 53.0	2.40	19 33.5
14	21 2 45.71	0.632	17 30 56.1	2.34	19 29.8
15	21 3 0.71	0.618	17 30 0.6	2.28	19 26.1
16	21 3 15.37	0.604	17 29 6.5	2.22	19 22.4
17	21 3 29.70	0.590	17 28 13.8	2.17	19 18.7
18	21 3 43.69	0.576	17 27 22.5	2.11	19 15.0
19	21 3 57.33	0.561	17 26 32.7	2.04	19 11.3
20	21 4 10.62	0.546	17 25 44.4	1.98	19 7.6
21	21 4 23.56	0.532	17 24 57.5	1.92	19 3.9
22	21 4 36.15	0.517	17 24 12.1	1.86	19 0.1
23	21 4 48.39	0.503	17 23 28.2	1.80	18 56.4
24	21 5 0.28	0.488	17 22 45.8	1.73	18 52.7
25	21 5 11.81	0.473	17 22 5.0	1.67	18 48.9
26	21 5 22.97	0.458	17 21 25.8	1.60	18 45.2
27	21 5 33.77	0.443	17 20 48.1	1.54	18 41.4
28	21 5 44.21	0.427	17 20 11.9	1.48	18 37.6
29	21 5 54.28	0.412	17 19 37.3	1.41	18 33.9
30	21 6 3.99	0.397	17 19 4.3	1.34	18 30.1
31	21 6 13.34	0.382	17 18 32.9	1.27	18 26.3
32	21 6 22.32	+0.366	−17 18 3.1	+1.21	18 22.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.5	7″.6	7″.7	7″.9
Horizontal Parallax	0.8	0.9	0.9	0.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

SATURN, 1874.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	21 6 13.34	+0.382	−17 18 32.9	+1.27	18 26.3
2	21 6 22.32	0.366	17 18 3.1	1.21	18 22.5
3	21 6 30.92	0.350	17 17 35.0	1.14	18 18.7
4	21 6 39.14	0.335	17 17 8.5	1.07	18 14.9
5	21 6 46.98	0.319	17 16 43.6	1.00	18 11.1
6	21 6 54.44	0.303	17 16 20.3	0.94	18 7.3
7	21 7 1.52	0.287	17 15 58.7	0.86	18 3.5
8	21 7 8.22	0.271	17 15 38.8	0.80	17 59.7
9	21 7 14.54	0.255	17 15 20.5	0.73	17 55.8
10	21 7 20.48	0.240	17 15 3.9	0.66	17 52.0
11	21 7 26.04	0.224	17 14 49.0	0.59	17 48.2
12	21 7 31.21	0.207	17 14 35.8	0.51	17 44.3
13	21 7 35.99	0.191	17 14 24.3	0.44	17 40.5
14	21 7 40.37	0.174	17 14 14.5	0.37	17 36.6
15	21 7 44.35	0.158	17 14 6.4	0.30	17 32.7
16	21 7 47.94	0.141	17 14 0.1	0.23	17 28.8
17	21 7 51.14	0.125	17 13 55.5	0.16	17 25.0
18	21 7 53.94	0.109	17 13 52.6	0.08	17 21.1
19	21 7 56.35	0.092	17 13 51.5	+0.01	17 17.2
20	21 7 58.37	0.076	17 13 52.1	−0.06	17 13.3
21	21 7 59.99	0.059	17 13 54.5	0.14	17 9.4
22	21 8 1.22	0.043	17 13 58.6	0.21	17 5.4
23	21 8 2.06	0.027	17 14 4.5	0.28	17 1.5
24	21 8 2.51	+0.011	17 14 12.1	0.35	16 57.6
25	21 8 2.57	−0.006	17 14 21.3	0.42	16 53.7
26	21 8 2.23	0.022	17 14 32.1	0.49	16 49.7
27	21 8 1.50	0.038	17 14 44.6	0.56	16 45.8
28	21 8 0.39	0.054	17 14 58.8	0.63	16 41.8
29	21 7 58.89	0.070	17 15 14.8	0.70	16 37.8
30	21 7 57.01	0.086	17 15 32.5	0.77	16 33.9
31	21 7 54.74	0.103	17 15 51.9	0.84	16 29.9
32	21 7 52.08	−0.119	−17 16 12.9	−0.91	16 25.9

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.9	8″.0	8″.1	8″.3
Horizontal Parallax	0.9	0.9	0.9	0.9

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	21 7 52.08	−0.119	−17 16 12.9	−0.91	16 25.9
2	21 7 49.04	0.135	17 16 35.6	0.98	16 22.0
3	21 7 45.61	0.151	17 16 59.9	1.05	16 18.0
4	21 7 41.80	0.166	17 17 25.9	1.12	16 14.0
5	21 7 37.62	0.182	17 17 53.6	1.19	16 10.0
6	21 7 33.06	0.198	17 18 22.9	1.25	16 5.9
7	21 7 28.12	0.214	17 18 53.8	1.32	16 1.9
8	21 7 22.80	0.229	17 19 26.2	1.38	15 57.9
9	21 7 17.11	0.245	17 20 0.2	1.45	15 53.8
10	11 7 11.06	0.260	17 20 35.7	1.51	15 49.8
11	21 7 4.64	0.275	17 21 12.8	1.58	15 45.7
12	21 6 57.85	0.291	17 21 51.5	1.64	15 41.7
13	21 6 50.69	0.306	17 22 31.7	1.71	15 37.7
14	21 6 43.17	0.321	17 23 13.5	1.77	15 33.6
15	21 6 35.29	0.336	17 23 56.8	1.83	15 29.5
16	21 6 27.06	0.350	17 24 41.5	1.89	15 25.5
17	21 6 18.49	0.364	17 25 27.7	1.95	15 21.4
18	21 6 9.58	0.379	17 26 15.3	2.01	15 17.3
19	21 6 0.32	0.393	17 27 4.3	2.07	15 13.2
20	21 5 50.73	0.406	17 27 54.6	2.12	15 9.1
21	21 5 40.82	0.420	17 28 46.3	2.18	15 5.0
22	21 5 30.58	0.433	17 29 39.3	2.24	15 0.9
23	21 5 20.02	0.447	17 30 33.6	2.29	14 56 8
24	21 5 9.13	0.460	17 31 29.2	2.34	14 52.7
25	21 4 57.92	0.473	17 32 26.1	2.40	14 48.6
26	21 4 46.41	0.486	17 33 24.2	2.44	14 44.5
27	21 4 34.61	0.498	17 34 23 4	2.49	14 40.3
28	21 4 22.52	0.510	17 35 23.8	2.54	14 36.2
29	21 4 10.14	0.522	17 36 25.3	2.59	14 32.1
30	21 3 57.48	0.533	17 37 27.9	2.63	14 27.9
31	21 3 44.54	0.545	17 38 31.5	2.67	14 23.8
32	21 3 31.33	−0.556	−17 39 36.2	−2.72	14 19.6

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.3	8″.4	8″.5	8″.6
Horizontal Parallax	0.9	1.0	1.0	1.0

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	21 3 44.54	−0.545	−17 38 31.5	−2.67	14 23.8
2	21 3 31.33	0.556	17 39 36.2	2.72	14 19.6
3	21 3 17.85	0.567	17 40 41.9	2.76	14 15.5
4	21 3 4.10	0.578	17 41 48.6	2.80	14 11.3
5	21 2 50.09	0.589	17 42 56.2	2.84	14 7.1
6	21 2 35.83	0.599	17 44 4.7	2.87	14 3.0
7	21 2 21.33	0.609	17 45 14.1	2.91	13 58.8
8	21 2 6.59	0.619	17 46 24.3	2.94	13 54.6
9	21 1 51.62	0.628	17 47 35.4	2.98	13 50.4
10	21 1 36.44	0.637	17 48 47.3	3.01	13 46.2
11	21 1 21.05	0.646	17 49 59.9	3.04	13 42.0
12	21 1 5.44	0.655	17 51 13.2	3.07	13 37.8
13	21 0 49.62	0.663	17 52 27.2	3.10	13 33.6
14	21 0 33.61	0.671	17 53 41.9	3.12	13 29.4
15	21 0 17.42	0.678	17 54 57.1	3.15	13 25.2
16	21 0 1.06	0.685	17 56 12.9	3.17	13 21.0
17	20 59 44.53	0.692	17 57 29.2	3.19	13 16.8
18	20 59 27.84	0.699	17 58 45.9	3.20	13 12.6
19	20 59 11.00	0.705	18 0 3.0	3.22	13 8.4
20	20 58 54.02	0.710	18 1 20.6	3.24	13 4.2
21	20 58 36.91	0.715	18 2 38.5	3.25	13 0.0
22	20 58 19.68	0.720	18 3 56.7	3.26	12 55.8
23	20 58 2.34	0.725	18 5 15.1	3.27	12 51.5
24	20 57 44.89	0.729	18 6 33.7	3.28	12 47.3
25	20 57 27.35	0.733	18 7 52.5	3.29	12 43.1
26	20 57 9.72	0.736	18 9 11.4	3.29	12 38.9
27	20 56 52.01	0.740	18 10 30.5	3.30	12 34.7
28	20 56 34.22	0.743	18 11 49.7	3.30	12 30.4
29	20 56 16.37	0.745	18 13 8.9	3.30	12 26.2
30	20 55 58.47	0.747	18 14 28.2	3.30	12 22.0
31	20 55 40.53	0.748	18 15 47.4	3.30	12 17.7
32	20 55 22.55	−0.750	−18 17 6.5	−3.29	12 13.5

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 55 22.55	−0.750	−18 17 6.5	−3.29	12 13.5
2	20 55 4.54	0.751	18 18 25.5	3.29	12 9.3
3	20 54 46.51	0.751	18 19 44.3	3.28	12 5.1
4	20 54 28.48	0.751	18 21 2.9	3.27	12 0.8
5	20 54 10.45	0.751	18 22 21.3	3.26	11 56.6
6	20 53 52.42	0.751	18 23 39.5	3.25	11 52.4
7	20 53 34.41	0.750	18 24 57.4	3.24	11 48.1
8	20 53 16.43	0.749	18 26 14.9	3.22	11 43.9
9	20 52 58.48	0.747	18 27 31.9	3.20	11 39.7
10	20 52 40.57	0.745	18 28 48.5	3.18	11 35.4
11	20 52 22.72	0.743	18 30 4.7	3.16	11 31.2
12	20 52 4.93	0.740	18 31 20.4	3.14	11 27.0
13	20 51 47.22	0.736	18 32 35.6	3.12	11 22.8
14	20 51 29.60	0.732	18 33 50.3	3.10	11 18.5
15	20 51 12.08	0.728	18 35 4.4	3.07	11 14.3
16	20 50 54.66	0.723	18 36 17.8	3.04	11 10.1
17	20 50 37.36	0.718	18 37 30.5	3.01	11 5.9
18	20 50 20.18	0.713	18 38 42.5	2.99	11 1.7
19	20 50 3.13	0.707	18 39 53.8	2.95	10 57.5
20	20 49 46.22	0.701	18 41 4.3	2.92	10 53.2
21	20 49 29.46	0.695	18 42 14.0	2.89	10 49.0
22	20 49 12.87	0.688	18 43 22.8	2.85	10 44.8
23	20 48 56.45	0.680	18 44 30.7	2.81	10 40.6
24	20 48 40.21	0.673	18 45 37.8	2.77	10 36.4
25	20 48 24.15	0.665	18 46 44.0	2.74	10 32.2
26	20 48 8.28	0.657	18 47 49.2	2.70	10 28.0
27	20 47 52.60	0.649	18 48 53.4	2.65	10 23.9
28	20 47 37.12	0.640	18 49 56.5	2.61	10 19.7
29	20 47 21.86	0.631	18 50 58.6	2.57	10 15.5
30	20 47 6.82	0.622	18 51 59.7	2.52	10 11.3
31	20 46 52.01	0.612	18 52 59.7	2.48	10 7.1
32	20 46 37.44	−0.602	−18 53 58.6	−2.43	10 3.0

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8.″6	8.″7	8.″7	8.″8
Horizontal Parallax	1.0	1.0	1.0	1.0

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8.″8	8.″8	8.″7	8.″7
Horizontal Parallax	1.0	1.0	1.0	1.0

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 46 37.44	−0.602	−18 53 58.6	−2.43	10 3.0
2	20 46 23.11	0.592	18 54 56.4	2.38	9 58.8
3	20 46 9.03	0.581	18 55 53.0	2.33	9 54.6
4	20 45 55.21	0.570	18 56 48.4	2.29	9 50.5
5	20 45 41.66	0.559	18 57 42.7	2.24	9 46.3
6	20 45 28.38	0.548	18 58 35.8	2.19	9 42.1
7	20 45 15.38	0.536	18 59 27.6	2.13	9 38.0
8	20 45 2.66	0.524	19 0 18.0	2.07	9 33.9
9	20 44 50.24	0.511	19 1 7.1	2.02	9 29.7
10	20 44 38.12	0.499	19 1 55.0	1.97	9 25.6
11	20 44 26.31	0.485	19 2 41.6	1.91	9 21.5
12	20 44 14.82	0.472	19 3 26.9	1.86	9 17.4
13	20 44 3.65	0.459	19 4 10.8	1.80	9 13.2
14	20 43 52.81	0.445	19 4 53.3	1.74	9 9.1
15	20 43 42.30	0.431	19 5 34.4	1.68	9 5.0
16	20 43 32.12	0.417	19 6 14.1	1.62	9 0.9
17	20 43 22.28	0.403	19 6 52.4	1.56	8 56.8
18	20 43 12.79	0.388	19 7 29.2	1.50	8 52.8
19	20 43 3.66	0.373	19 8 4.6	1.44	8 48.7
20	20 42 54.88	0.358	19 8 38.5	1.38	8 44.6
21	20 42 46.46	0.343	19 9 10.9	1.32	8 40.5
22	20 42 38.41	0.328	19 9 41.8	1.26	8 36.4
23	20 42 30.73	0.312	19 10 11.3	1.20	8 32.4
24	20 42 23.42	0.297	19 10 39.3	1.13	8 28.3
25	20 42 16.48	0.281	19 11 5.7	1.07	8 24.3
26	20 42 9.92	0.265	19 11 30.6	1.01	8 20.3
27	20 42 3.74	0.249	19 11 54.0	0.94	8 16.2
28	20 41 57.95	0.233	19 12 15.8	0.88	8 12.2
29	20 41 52.54	0.217	19 12 36.1	0.81	8 8.2
30	20 41 47.52	0.201	19 12 54.9	0.75	8 4.2
31	20 41 42.89	0.185	19 13 12.1	0.69	8 0.2
32	20 41 38.66	−0.168	−19 13 27.8	−0.62	7 56.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.6	8″.6	8″.5	8″.3
Horizontal Parallax	1.0	1.0	1.0	0.9

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 41 42.89	−0.185	−19 13 12.1	−0.69	8 0.2
2	20 41 38.66	0.168	19 13 27.8	0.62	7 56.2
3	20 41 34.82	0.152	19 13 41.9	0.55	7 52.2
4	20 41 31.38	0.135	19 13 54.4	0.49	7 48.2
5	20 41 28.35	0.118	19 14 5.3	0.42	7 44.2
6	20 41 25.72	0.101	19 14 14.7	0.36	7 40.2
7	20 41 23.50	0.084	19 14 22.5	0.29	7 36.3
8	20 41 21.69	0.067	19 14 28.8	0.23	7 32.3
9	20 41 20.30	0.050	19 14 33.5	0.16	7 28.4
10	20 41 19.32	0.032	19 14 36.6	0.09	7 24.4
11	20 41 18.76	−0.015	19 14 38.0	−0.02	7 20.5
12	20 41 18.61	+0.002	19 14 37.8	+0.04	7 16.6
13	20 41 18.87	0.020	19 14 36.0	0.11	7 12.6
14	20 41 19.55	0.037	19 14 32.7	0.17	7 8.7
15	20 41 20.65	0.054	19 14 27.8	0.24	7 4.8
16	20 41 22.16	0.072	19 14 21.2	0.31	7 0.9
17	20 41 24.09	0.089	19 14 13.0	0.38	6 57.0
18	20 41 26.44	0.106	19 14 3.1	0.45	6 53.1
19	20 41 29.20	0.124	19 13 51.6	0.51	6 49.2
20	20 41 32.38	0.141	19 13 38.6	0.57	6 45.3
21	20 41 35.97	0.158	19 13 24.0	0.64	6 41.5
22	20 41 39.98	0.175	19 13 7.9	0.70	6 37.6
23	20 41 44.40	0.193	19 12 50.2	0.77	6 33.7
24	20 41 49.23	0.210	19 12 30.9	0.84	6 29.9
25	20 41 54.47	0.227	19 12 10.0	0.90	6 26.0
26	20 42 0.11	0.244	19 11 47.6	0.97	6 22.2
27	20 42 6.16	0.260	19 11 23.6	1.03	6 18.4
28	20 42 12.61	0.277	19 10 58.0	1.10	6 14.6
29	20 42 19.47	0.294	19 10 30.9	1.16	6 10.7
30	20 42 26.73	0.311	19 10 2.3	1.22	6 6.9
31	20 42 34.40	0.328	19 9 32.1	1.29	6 3.1
32	20 42 42.47	+0.345	−19 9 0.4	+1.35	5 59.3

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.3	8″.2	8″.1	7″.9
Horizontal Parallax	0.9	0.9	0.9	0.9

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	20 42 42.47	+0.345	−19 9 0.4	+1.35	5 59.3	1	20 49 38.18	+0.789	−18 41 42.7	+3.14	4 8.3
2	20 42 50.94	0.361	19 8 27.2	1.41	5 55.6	2	20 49 57.28	0.802	18 40 26.7	3.19	4 4.7
3	20 42 59.80	0.377	19 7 52.5	1.48	5 51.8	3	20 50 16.67	0.814	18 39 9.4	3.25	4 1.1
4	20 43 9.05	0.394	19 7 16.2	1.55	5 48.0	4	20 50 36.35	0.826	18 37 50.9	3.30	3 57.5
5	20 43 18.70	0.410	19 6 38.3	1.61	5 44.2	5	20 50 56.32	0.838	18 36 31.1	3.35	3 53.9
6	20 43 28.74	0.427	19 5 58.9	1.68	5 40.4	6	20 51 16.58	0.850	18 35 10.2	3.40	3 50.3
7	20 43 39.18	0.443	19 5 17.9	1.74	5 36.7	7	20 51 37.12	0.862	18 33 48.1	3.45	3 46.7
8	20 43 50.01	0.459	19 4 35.4	1.80	5 32.9	8	20 51 57.94	0.873	18 32 24.8	3.50	3 43.1
9	20 44 1.22	0.475	19 3 51.5	1.86	5 29.2	9	20 52 19.04	0.885	18 31 0.3	3.55	3 39.5
10	20 44 12.81	0.491	19 3 6.1	1.92	5 25.5	10	20 52 40.41	0.896	18 29 34.5	3.60	3 35.9
11	20 44 24.77	0.506	19 2 19.2	1.99	5 21.7	11	20 53 2.04	0.906	18 28 7.4	3.65	3 32.4
12	20 44 37.11	0.522	19 1 30.8	2.05	5 18.0	12	20 53 23.92	0.917	18 26 39.1	3.70	3 28.8
13	20 44 49.82	0.537	19 0 40.9	2.11	5 14.3	13	20 53 46.06	0.928	18 25 9.7	3.75	3 25.2
14	20 45 2.90	0.553	18 59 49.6	2.17	5 10.6	14	20 54 8.45	0.938	18 23 39.2	3.79	3 21.7
15	20 45 16.35	0.568	18 58 56.8	2.23	5 6.9	15	20 54 31.08	0.948	18 22 7.7	3.84	3 18.1
16	20 45 30.17	0.583	18 58 2.5	2.29	5 3.2	16	20 54 53.94	0.958	18 20 35.1	3.88	3 14.6
17	20 45 44.35	0.598	18 57 6.8	2.35	4 59.5	17	20 55 17.04	0.968	18 19 1.4	3.93	3 11.0
18	20 45 58.88	0.612	18 56 9.7	2.41	4 55.8	18	20 55 40.37	0.977	18 17 26.6	3.97	3 7.5
19	20 46 13.75	0.627	18 55 11.1	2.47	4 52.1	19	20 56 3.92	0.986	18 15 50.7	4.02	3 3.9
20	20 46 28.97	0.641	18 54 11.1	2.53	4 48.4	20	20 56 27.69	0.995	18 14 13.8	4.06	3 0.4
21	20 46 44.53	0.655	18 53 9.8	2.58	4 44.7	21	20 56 51.68	1.004	18 12 35.8	4.10	2 56.9
22	20 47 0.43	0.670	18 52 7.2	2.64	4 41.1	22	20 57 15.89	1.013	18 10 56.8	4.15	2 53.3
23	20 47 16.67	0.684	18 51 3.2	2.70	4 37.4	23	20 57 40.30	1.021	18 9 16.8	4.19	2 49.8
24	20 47 33.24	0.697	18 49 57.8	2.75	4 33.8	24	20 58 4.91	1.029	18 7 35.8	4.23	2 46.3
25	20 47 50.14	0.711	18 48 51.0	2.81	4 30.1	25	20 58 29.71	1.037	18 5 53.9	4.26	2 42.8
26	20 48 7.36	0.724	18 47 42.9	2.87	4 26.5	26	20 58 54.70	1.045	18 4 11.1	4.30	2 39.3
27	20 48 24.89	0.737	18 46 33.4	2.92	4 22.8	27	20 59 19.87	1.053	18 2 27.3	4.34	2 35.7
28	20 48 42.74	0.750	18 45 22.6	2.97	4 19.2	28	20 59 45.22	1.060	18 0 42.6	4.38	2 32.2
29	20 49 0.91	0.764	18 44 10.6	3.03	4 15.6	29	21 0 10.76	1.068	17 58 57.0	4.42	2 28.7
30	20 49 19.39	0.776	18 42 57.3	3.08	4 11.9	30	21 0 36.48	1.075	17 57 10.5	4.46	2 25.2
31	20 49 38.18	0.789	18 41 42.7	3.14	4 8.3	31	21 1 2.37	1.082	17 55 23.1	4.49	2 21.7
32	20 49 57.28	+0.802	−18 40 26.7	+3.19	4 4.7	32	21 1 28.43	+1.089	−17 53 34.8	+4.53	2 18.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7.″9	7.″8	7.″7	7.″6
Horizontal Parallax	0.9	0.9	0.9	0.9

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7.″6	7.″5	7.″4	7.″3
Horizontal Parallax	0.9	0.8	0.8	0.8

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

SUN'S COÖRDINATES, 1874.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Jan. 1	1	+.1872883	−.8854576	−.3842225	Mar. 1	60	+.9361334	−.2994343	−.1299318
2	2	.2044247	.8822645	.3828367	2	61	.9419347	.2844425	.1234265
3	3	.2214974	.8787979	.3813323	3	62	.9474517	.2693650	.1168842
4	4	.2385017	.8750591	.3797098	4	63	.9526830	.2542064	.1103068
5	5	.2554327	.8710491	.3779697	5	64	.9576273	.2389709	.1036961
6	6	+.2722851	−.8667689	−.3761126	6	65	+.9622833	−.2236629	−.0970540
7	7	.2890539	.8622196	.3741388	7	66	.9666497	.2082866	.0903824
8	8	.3057341	.8574026	.3720490	8	67	.9707252	.1928462	.0836831
9	9	.3223207	.8523192	.3698437	9	68	.9745086	.1773464	.0769581
10	10	.3388089	.8469706	.3675235	10	69	.9779986	.1617918	.0702092
11	11	+.3551935	−.8413581	−.3650888	11	70	+.9811941	−.1461869	−.0634382
12	12	.3714689	.8354830	.3625402	12	71	.9840940	.1305366	.0566473
13	13	.3876298	.8293469	.3598783	13	72	.9866974	.1148456	.0498385
14	14	.4036710	.8229516	.3571036	14	73	.9890032	.0991187	.0430139
15	15	.4195874	.8162990	.3542176	15	74	.9910107	.0833609	.0361758
16	16	+.4353736	−.8093910	−.3512205	16	75	+.9927193	−.0675771	−.0293265
17	17	.4510242	.8022300	.3481135	17	76	.9941287	.0517726	.0224681
18	18	.4665340	.7948185	.3448978	18	77	.9952386	.0359526	.0156028
19	19	.4818980	.7871590	.3415743	19	78	.9960486	.0201221	.0087329
20	20	.4971111	.7792542	.3381441	20	79	.9965589	−.0042860	−.0018604
21	21	+.5121682	−.7711070	−.3346086	21	80	+.9967699	+.0115508	+.0050125
22	22	.5270647	.7627202	.3309690	22	81	.9966820	.0273832	.0118836
23	23	.5417964	.7540969	.3272266	23	82	.9962957	.0432063	.0187507
24	24	.5563587	.7452401	.3233828	24	83	.9956116	.0590153	.0256115
25	25	.5707471	.7361529	.3194389	25	84	.9946305	.0748054	.0324638
26	26	+.5849572	−.7268384	−.3153965	26	85	+.9933535	+.0905717	+.0393055
27	27	.5989849	.7172999	.3112570	27	86	.9917816	.1063095	.0461346
28	28	.6128261	.7075407	.3070218	28	87	.9899157	.1220142	.0529493
29	29	.6264771	.6975639	.3026922	29	88	.9877569	.1376816	.0597477
30	30	.6399343	.6873726	.2982694	30	89	.9853065	.1533075	.0665281
31	31	+.6531941	−.6769700	−.2937551	31	90	+.9825656	+.1688877	+.0732887
Feb. 1	32	.6662528	.6663594	.2891508	Apr. 1	91	.9795352	.1844180	.0800273
2	33	.6791068	.6555441	.2844578	2	92	.9762165	.1998940	.0867421
3	34	.6917523	.6445270	.2796774	3	93	.9726106	.2153114	.0934316
4	35	.7041856	.6333115	.2748111	4	94	.9687188	.2306660	.1000939
5	36	+.7164032	−.6219008	−.2698603	5	95	+.9645421	+.2459535	+.1067271
6	37	.7284016	.6102982	.2648262	6	96	.9600817	.2611698	.1133293
7	38	.7401772	.5985070	.2597104	7	97	.9553390	.2763105	.1198988
8	39	.7517262	.5865307	.2545143	8	98	.9503153	.2913713	.1264337
9	40	.7630449	.5743728	.2492395	9	99	.9450118	.3063478	.1329322
10	41	+.7741297	−.5620369	−.2438874	10	100	+.9394298	+.3212356	+.1393924
11	42	.7849770	.5495269	.2384596	11	101	.9335708	.3360303	.1458124
12	43	.7955831	.5368466	.2329577	12	102	.9274366	.3507274	.1521902
13	44	.8059446	.5240000	.2273834	13	103	.9210290	.3653223	.1585238
14	45	.8160581	.5109912	.2217386	14	104	.9143501	.3798105	.1648112
15	46	+.8259206	−.4978244	−.2160251	15	105	+.9074022	+.3941874	+.1710505
16	47	.8355290	.4845038	.2102449	16	106	.9001874	.4084486	.1772397
17	48	.8448800	.4710340	.2043998	17	107	.8927082	.4225897	.1833767
18	49	.8539706	.4574196	.1984917	18	108	.8849671	.4366064	.1894596
19	50	.8627981	.4436650	.1925226	19	109	.8769669	.4504947	.1954869
20	51	+.8713600	+.4297750	−.1864948	20	110	+.8687104	+.4642505	+.2014564
21	52	.8796541	.4157545	.1804099	21	111	.8602005	.4778698	.2073666
22	53	.8876783	.4016079	.1742705	22	112	.8514402	.4913485	.2132158
23	54	.8954306	.3873397	.1680785	23	113	.8424327	.5046829	.2190023
24	55	.9029091	.3729546	.1618358	24	114	.8331811	.5178694	.2247245
25	56	+.9101118	−.3584570	−.1555444	25	115	+.8236887	+.5309046	+.2303809
26	57	.9170370	.3438517	.1492062	26	116	.8139587	.5437850	.2359698
27	58	.9236833	.3291432	.1428235	27	117	.8039942	.5565073	.2414899
28	59	.9300492	.3143360	.1363981	28	118	.7937985	.5690682	.2469397
29	60	+.9361334	−.2994343	−.1299318	29	119	.7833747	.5814646	.2523181
					30	120	+.7727258	+.5936934	+.2576239
					31	121	+.7618551	+.6057514	+.2628557

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
May 1	121	+.7618551	+.6057514	+.2628557	July 1	182	−.1663083	+.9201352	+.3992727
2	122	.7507658	.6176355	.2680120	2	183	.1829692	.9174769	.3981194
3	123	.7394608	.6293426	.2730915	3	184	.1995796	.9145614	.3968545
4	124	.7279430	.6408697	.2780928	4	185	.2161354	.9113982	.3954785
5	125	.7162156	.6522136	.2830147	5	186	.2326319	.9079609	.3939914
6	126	+.7042819	+.6633710	+.2878559	6	187	−.2490646	+.9042770	+.3923935
7	127	.6921451	.6743388	.2926150	7	188	.2654288	.9003379	.3906850
8	128	.6798084	.6851138	.2972907	8	189	.2817197	.8061444	.3888662
9	129	.6672753	.6956930	.3018815	9	190	.2979326	.8916978	.3869374
10	130	.6545492	.7060732	.3063860	10	191	.3140626	.8869992	.3848991
11	131	+.6416338	+.7162514	+.3108029	11	192	−.3301046	+.8820494	+.3827518
12	132	.6285329	.7262244	.3151310	12	193	.3460540	.8768496	.3804969
13	133	.6152503	.7359892	.3193688	13	194	.3619060	.8714013	.3781322
14	134	.6017900	.7455426	.3235150	14	195	.3776556	.8657060	.3756610
15	135	.5881562	.7548818	.3275684	15	196	.3932980	.8597655	.3730832
16	136	+.5743529	+.7640040	+.3315275	16	197	−.4088285	+.8535819	+.3703997
17	137	.5603844	.7729065	.3353911	17	198	.4242424	.8471563	.3676114
18	138	.5462554	.7815868	.3391582	18	199	.4395353	.8404913	.3647190
19	139	.5319704	.7900423	.3428278	19	200	.4547027	.8335888	.3617233
20	140	.5175340	.7982708	.3463987	20	201	.4697403	.8264512	.3586255
21	141	+.5029509	+.8062704	+.3498700	21	202	−.4846438	+.8190810	+.3554266
22	142	.4882253	.8140394	.3532409	22	203	.4994091	.8114805	.3521278
23	143	.4733618	.8215758	.3565108	23	204	.5140322	.8036519	.3487303
24	144	.4583648	.8288777	.3596789	24	205	.5285091	.7955976	.3452348
25	145	.4432390	.8359433	.3627444	25	206	.5428361	.7873198	.3416423
26	146	+.4279888	+.8427711	+.3657066	26	207	−.5570094	+.7788209	+.3379540
27	147	.4126185	.8493596	.3685648	27	208	.5710253	.7701032	.3341709
28	148	.3971324	.8557074	.3713185	28	209	.5848803	.7611690	.3302941
29	149	.3815347	.8618133	.3739672	29	210	.5985709	.7520208	.3263246
30	150	.3658298	.8676757	.3765103	30	211	.6120933	.7426608	.3222634
31	151	+.3500219	+.8732931	+.3789473	31	212	−.6254437	+.7330915	+.3181114
Jun. 1	152	.3341150	.8786643	.3812776	Aug. 1	213	.6386184	.7233154	.3138697
2	153	.3181133	.8837879	.3835006	2	214	.6516139	.7133347	.3095393
3	154	.3020208	.8886624	.3856156	3	215	.6644264	.7031517	.3051211
4	155	.2858420	.8932865	.3876221	4	216	.6770519	.6927688	.3006163
5	156	+.2695814	+.8976588	+ .3895195	5	217	−.6894866	+.6821884	+.2960260
6	157	.2532432	.9017780	.3913072	6	218	.7017268	.6714133	.2913512
7	158	.2368320	.9056427	.3929845	7	219	.7137688	.6604463	.2865929
8	159	.2203525	.9092515	.3945509	8	220	.7256087	.6492903	.2817525
9	160	.2038091	.9126031	.3960058	9	221	.7372425	.6379485	.2768313
10	161	+.1872066	+.9156963	+.3973487	10	222	−.7486663	+.6264242	+.2718306
11	162	.1705499	.9185299	3985791	11	223	.7598763	.6147204	.2667519
12	163	.1538439	.9211029	.3996965	12	224	.7708690	.6028404	.2615966
13	164	.1370934	.9234147	.4007004	13	225	.7816411	.5907878	.2563664
14	165	.1203034	.9254646	.4015904	14	226	.7921892	.5785662	.2510627
15	166	+.1034790	+.9272518	+.4023663	15	227	−.8025101	+.5661793	+.2456871
16	167	.0866255	.9287759	.4030279	16	228	.8126006	.5536307	.2402412
17	168	.0697480	.9300368	.4035751	17	229	.8224576	.5409243	.2347268
18	169	.0528518	.9310343	.4040078	18	230	.8320783	.5280640	.2291456
19	170	.0359420	.9317683	.4043260	19	231	.8414601	.5150539	.2234994
20	171	+.0190235	+.9322388	+.4045298	20	232	−.8506003	+.5018975	+.2177899
21	172	+.0021011	.9324460	.4046192	21	233	.8594963	.4885989	.2120187
22	173	−.0148204	.9323903	.4045945	22	234	.8681458	.4751618	.2061875
23	174	.0317362	.9320721	.4044558	23	235	.8765465	.4615900	.2002980
24	175	.0486415	.9314918	.4042033	24	236	.8846963	.4478872	.1943519
25	176	−.0655317	+.9306500	+.4038373	25	237	−.8925932	+.4340573	+.1883508
26	177	.0824024	.9295472	.4033581	26	238	.9002350	.4201039	.1822962
27	178	.0992491	.9281838	.4027659	27	239	.9076196	.4060307	.1761896
28	179	.1160674	.9265603	.4020610	28	240	.9147448	.3918415	.1700328
29	180	.1328530	.9246774	.4012437	29	241	.9216084	.3775399	.1638274
30	181	−.1496014	+.9225356	+.4003142	30	242	−.9282084	+.3631297	+.1575749
31	182	−.1663083	+.9201352	+.3992727	31	243	−.9345428	+.3486146	+.1512769

Greenwich Mean Noon.	d	X.	Y.	Z.	Greenwich Mean Noon.	d	X.	Y.	Z.
Sept. 1	244	-.9406093	+.3339985	+.1449350	Nov. 1	305	-.7716382	-.5716809	-.2480707
2	245	.9464057	.3192851	.1385509	2	306	.7604340	.5838273	.2533418
3	246	.9519299	.3044782	.1321262	3	307	.7489978	.5957975	.2585366
4	247	.9571796	.2895819	.1256627	4	308	.7373324	.6075876	.2636532
5	248	.9621528	.2746003	.1191621	5	309	.7254412	.6191936	.2686899
6	249	-.9668479	+.2595380	+.1126264	6	310	-.7133276	-.6306112	-.2736449
7	250	.9712624	.2443994	.1060574	7	311	.7010952	.6418365	.2785165
8	251	.9753948	.2291890	.0994569	8	312	.6884477	.6528656	.2833030
9	252	.9792434	.2139111	.0928270	9	313	.6756891	.6636948	.2880029
10	253	.9828065	.1985703	.0861696	10	314	.6627232	.6743203	.2926144
11	254	-.9860828	+.1831713	+.0794867	11	315	-.6495541	-.6847387	-.2971358
12	255	.9890710	.1677188	.0727805	12	316	.6361861	.6949465	.3015656
13	256	.9917698	.1522176	.0660533	13	317	.6226239	.7049405	.3059025
14	257	.9941783	.1366726	.0593071	14	318	.6088718	.7147177	.3101451
15	258	.9962958	.1210887	.0525439	15	319	.5949340	.7242750	.3142921
16	259	-.9981217	+.1054705	+.0457659	16	320	-.5808151	-.7336092	-.3183422
17	260	.9996556	.0898227	.0389752	17	321	.5665196	.7427175	.3222941
18	261	1.0008970	.0741499	.0321738	18	322	.5520518	.7515974	.3261467
19	262	1.0018457	.0584568	.0253636	19	323	.5374162	.7602464	.3298900
20	263	1.0025016	.0427479	.0185467	20	324	.5226172	.7686619	.3335501
21	264	-1.0028647	+.0270278	+.0117252	21	325	-.5076591	-.7768415	-.3370989
22	265	1.0029350	+.0113011	+.0049009	22	326	.4925463	.7847831	.3405444
23	266	1.0027125	-.0044280	-.0019242	23	327	.4772830	.7924844	.3438856
24	267	1.0021970	.0201551	.0087483	24	328	.4618737	.7999430	.3471215
25	268	1.0013886	.0358756	.0155695	25	329	.4463226	.8071567	.3502512
26	269	-1.0002874	-.0515854	-.0223859	26	330	-.4306341	-.8141230	-.3532737
27	270	.9988934	.0672801	.0291958	27	331	.4148128	.8208395	.3561880
28	271	.9972068	.0829557	.0359973	28	332	.3988633	.8273041	.3589931
29	272	.9952276	.0986076	.0427886	29	333	.3827901	.8335146	.3616881
30	273	.9929558	.1142316	.0495679	30	334	.3665976	.8394688	.3642720
Oct. 1	274	-.9903915	-.1298232	-.0563333	Dce. 1	335	-.3502904	-.8451644	-.3667439
2	275	.9875350	.1453780	.0630829	2	336	.3338732	.8505993	.3691027
3	276	.9843865	.1608913	.0698146	3	337	.3173510	.8557714	.3713476
4	277	.9809464	.1763585	.0765263	4	338	.3007289	.8606786	.3734777
5	278	.9772148	.1917748	.0832159	5	339	.2840122	.8653189	.3754920
6	279	-.9731924	-.2071353	-.0898815	6	340	-.2672065	-.8696905	-.3773896
7	280	.9688798	.2224350	.0965210	7	341	.2503170	.8737917	.3791698
8	281	.9642779	.2376691	.1031323	8	342	.2333492	.8776208	.3808319
9	282	.9593877	.2528330	.1097131	9	343	.2163084	.8811765	.3823752
10	283	.9542104	.2679217	.1162613	10	344	.1992002	.8844577	.3837991
11	284	-.9487473	-.2829302	-.1227747	11	345	-.1820305	-.8874632	-.3851032
12	285	.9429999	2978536	.1292512	12	346	.1648050	.8901921	.3862872
13	286	.9369698	.3126871	.1356887	13	347	.1475294	.8926436	.3873507
14	287	.9306589	.3274261	.1420850	14	348	.1302093	.8948170	.3882935
15	288	.9240693	.3420659	.1484381	15	349	.1128503	.8967118	.3891153
16	289	-.9172032	-.3566022	-.1547462	16	350	-.0954578	-.8983277	-.3898159
17	290	.9100628	.3710304	.1610073	17	351	.0780372	.8996643	.3903952
18	291	.9026504	.3853460	.1672194	18	352	.0605940	.9007215	.3908533
19	292	.8949682	.3995446	.1733806	19	353	.0431335	.9014994	.3911902
20	293	.8870186	.4136222	.1794891	20	354	.0256608	.9019980	.3914059
21	294	-.8788039	-.4275748	-.1855432	21	355	-.0081810	-.9022173	-.3915005
22	295	.8703263	.4413984	.1915413	22	356	+.0093008	.9021573	.3914740
23	296	.8615883	.4550892	.1974816	23	357	.0267793	.9018181	.3913265
24	297	.8525925	.4686430	.2033622	24	358	.0442493	.9011997	.3910580
25	298	.8433414	.4820560	.2091819	25	359	.0617058	.9003023	.3906685
26	299	-.8338374	-.4953244	-.2149389	26	360	+.0791439	-.8991259	-.3901582
27	300	.8240830	.5084443	.2206315	27	361	.0965585	.8976707	.3895271
28	301	.8140803	.5214119	.2262582	28	362	.1139443	.8959369	.3887753
29	302	.8038318	.5342233	.2318172	29	363	.1312959	.8939248	.3879028
30	303	.7933401	.5468747	.2373067	30	364	.1486082	.8916346	.3869096
31	304	-.7826079	-.5593620	-.2427251	31	365	+.1658759	-.8890666	-.3857960
32	305	-.7716382	-.5716809	-.2480707	32	366	+.1830936	-.8862213	-.3845621

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	85° 14′ 6″.2	+3° 23′ 10″.1	132° 42′ 44″.0	+4° 59′ 3″.0	141° 43′ 15″.4	+4° 54′ 47″.6
1.5	91 52 8.7	3 48 0.9	138 53 18.3	4 55 49.5	147 47 9.1	4 45 10.4
2.0	98 27 1.0	4 9 34.6	145 1 12.8	4 49 10.4	153 49 10.6	4 32 23.4
2.5	104 58 30.7	4 27 38.7	151 6 32.1	4 39 14.4	159 49 28.4	4 16 37.2
3.0	111 26 27.6	4 42 4.4	157 9 23.5	4 26 11.9	165 48 11.7	3 58 3.7
3.5	117 50 44.1	4 52 46.7	163 9 57.6	4 10 14.6	171 45 30.8	3 36 56.3
4.0	124 11 15.8	4 59 44.0	169 8 28.3	3 51 35.3	177 41 37.4	3 13 29.4
4.5	130 28 2.1	5 2 58.0	175 5 13.2	3 30 27.6	183 36 44.8	2 47 58.3
5.0	136 41 6.7	5 2 32.9	181 0 33.2	3 7 6.0	189 31 8.8	2 20 39.1
5.5	142 50 38.1	4 58 35.5	186 54 52.9	2 41 45.1	195 25 7.4	1 51 48.4
6.0	148 56 49.1	4 51 14.2	192 48 40.2	2 14 40.0	201 19 1.0	1 21 43.1
6.5	154 59 56.7	4 40 38.9	198 42 26.4	1 46 6.2	207 13 12.7	0 50 40.8
7.0	161 0 22.5	4 27 0.5	204 36 45.7	1 16 19.2	213 8 8.3	+0 18 59.4
7.5	166 58 31.8	4 10 30.7	210 32 14.6	0 45 35.0	219 4 16.2	−0 13 3.1
8.0	172 54 53.7	3 51 21.6	216 29 32.0	+0 14 10.3	225 2 7.4	0 45 8.3
8.5	178 50 0.6	3 29 46.4	222 29 18.4	−0 17 37.9	231 2 14.7	1 16 57.5
9.0	184 44 27.7	3 5 57.6	228 32 15.1	0 49 31.6	237 5 13.0	1 48 11.3
9.5	190 38 52.7	2 40 8.5	234 39 3.9	1 21 11.6	243 11 38.5	2 18 29.7
10.0	196 33 55.1	2 12 32.7	240 50 25.9	1 52 17.6	249 22 8.2	2 47 32.0
10.5	202 30 15.7	1 43 24.2	247 7 0.9	2 22 27.8	255 37 19.0	3 14 56.8
11.0	208 28 36.0	1 12 58.0	253 29 25.9	2 51 18.8	261 57 46.8	3 40 21.7
11.5	214 29 37.7	0 41 30.0	259 58 13.6	3 18 25.5	268 24 5.7	4 3 23.4
12.0	220 34 1.8	+0 9 17.0	266 33 51.0	3 43 21.5	274 56 46.5	4 23 38.0
12.5	226 42 27.6	−0 23 22.5	273 16 38.2	4 5 39 3	281 36 15.4	4 40 41.1
13.0	232 55 31.9	0 56 8.1	280 6 46.5	4 24 50.6	288 22 52.6	4 54 8.3
13.5	239 13 48.3	1 28 37.9	287 4 16.3	4 40 27.6	295 16 50.1	5 3 36.2
14.0	245 37 45.9	2 0 27.7	294 8 56.4	4 52 3.7	302 18 9.8	5 8 43.0
14.5	252 7 47.7	2 31 11.4	301 20 22.8	4 59 15.0	309 26 42.5	5 9 9.6
15.0	258 44 9.9	3 0 21.1	308 37 58.5	5 1 41.8	316 42 6.7	5 4 41.4
15.5	265 27 0.7	3 27 27.4	316 0 54.2	4 59 10.0	324 3 47.8	4 55 9.4
16.0	272 16 18.9	3 52 0.3	323 28 9.5	4 51 32.4	331 30 58.3	4 40 31.6
16.5	279 11 53.2	4 13 29.5	330 58 35.5	4 38 50.0	339 2 39.2	4 20 54.6
17.0	286 13 21.9	4 31 26.0	338 30 57.8	4 21 12.7	346 37 41.4	3 56 33.4
17.5	293 20 13.2	4 45 23.6	346 3 59.6	3 58 58.4	354 14 49.3	3 27 52.0
18.0	300 31 45.7	4 54 59.0	353 36 25.1	3 32 33.5	1 52 42.9	2 55 23.2
18.5	307 47 9.9	4 59 54.4	1 7 3.1	3 2 30.8	9 30 2.3	2 19 46.4
19.0	315 5 30.2	4 59 58.2	8 34 50.2	2 29 28.5	17 5 30.6	1 41 46.7
19.5	322 25 47.3	4 55 5.6	15 58 52.0	1 54 8.1	24 37 57.0	1 2 12.1
20.0	329 47 0.7	4 45 18.9	23 18 25.2	1 17 12.3	32 6 19.4	−0 21 51.7
20.5	337 8 11.5	4 30 48.0	30 32 57.8	0 39 23.7	39 29 45.8	+0 18 26.8
21.0	344 28 24.6	4 11 49.7	37 42 8.6	−0 1 23.2	46 47 35.5	0 57 58.5
21.5	351 46 51.4	3 48 46.8	44 45 46.7	+0 36 10.9	53 59 19.5	1 36 3.0
22.0	359 2 50.9	3 22 6.9	51 43 50.0	1 12 44.0	61 4 40.0	2 12 5.3
22.5	6 15 50.3	2 52 21.6	58 36 23.8	1 47 45.0	68 3 29.2	2 45 36.1
23.0	13 25 25.3	2 20 4.9	65 23 39.1	2 20 47.1	74 55 48.5	3 16 11.4
23.5	20 31 20.1	1 45 52.4	72 5 51.1	2 51 27.0	81 41 46.8	3 43 32.7
24.0	27 33 26.5	1 10 19.7	78 43 17.7	3 19 25 3	88 21 39.0	4 7 26.3
24.5	34 31 42.5	−0 34 2.2	85 16 18.3	3 44 25.9	94 55 44.9	4 27 42.4
25.0	41 26 11.0	+0 2 25.9	91 45 12.9	4 6 15.8	101 24 27.2	4 44 15.2
25.5	48 16 58.8	0 38 32.1	98 10 20.9	4 24 44.8	107 48 10.9	4 57 1.7
26.0	55 4 15.1	1 13 45.9	104 32 0.7	4 39 45.6	114 7 22.3	5 6 1.3
26.5	61 48 9.8	1 47 38.8	110 50 29.6	4 51 12.9	120 22 27.7	5 11 15.8
27.0	68 28 53.4	2 19 44.7	117 6 3.2	4 59 4.1	126 33 53.2	5 12 48.6
27.5	75 6 35.4	2 49 40.0	123 18 55.1	5 3 18.7	132 42 4.4	5 10 44.8
28.0	81 41 24.1	3 17 4.0	129 29 17.5	5 3 58.2	138 47 25.5	5 5 10.7
28.5	88 13 25.8	3 41 38.4	135 37 21.1	5 1 6.0	144 50 19.3	4 56 13.9
29.0	94 42 45.1	4 3 7.8	141 43 15.4	4 54 47.6	150 51 7.3	4 44 3.2
29.5	101 9 24.8	4 21 19.8	147 47 9.1	4 45 10.4	156 50 9.3	4 28 48.8
30.0	107 33 25.6	4 36 4.6	153 49 10.6	4 32 23.4	162 47 44.1	4 10 41.9
30.5	113 54 46.9	4 47 15.6	159 49 28.4	4 16 37.2	168 44 9.0	3 49 54.7
31.0	120 13 27.9	4 54 49.1	165 48 11.7	3 58 3.7	174 39 40.3	3 26 40.7
31.5	126 29 27.3	+4 58 44.3	171 45 30.8	+3 36 56.3	180 34 33.6	+3 1 14.4

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	186° 29′ 4″.1	+2° 33′ 51″.4	218° 59′ 56″.1	−0° 18′ 10″.8	265° 1′ 14″.2	−3° 57′ 25″.3
1.5	192 23 26.7	2 4 48.3	225 0 31.8	0 51 19.8	271 27 11.5	4 18 23.2
2.0	198 17 56.2	1 34 22.3	231 3 9.5	1 24 4.9	277 56 39.1	4 36 12.3
2·5	204 12 48.2	1 2 51.6	237 8 2.7	1 56 4.3	284 29 33.9	4 50 33.8
3.0	210 8 19.0	+0 30 35.0	243 15 24.5	2 26 55.9	291 5 51.9	5 1 11.0
3.5	216 4 45.8	−0 2 8.3	249 25 27.8	2 56 17.7	297 45 28.2	5 7 49.8
4.0	222 2 26.8	0 34 58.5	255 38 25.3	3 23 47.8	304 28 17.2	5 10 19.2
4.5	228 1 41.9	1 7 35.5	261 54 29.5	3 49 4.5	311 14 13.3	5 8 31.2
5.0	234 2 52.4	1 39 38.9	268 13 53.2	4 11 46.8	318 3 10.9	5 2 21.7
5.5	240 6 20.9	2 10 48.1	274 36 49.3	4 31 34.6	324 55 4.6	4 51 50.3
6.0	246 12 31.6	2 40 42.5	281 3 30.4	4 48 8.6	331 49 49.0	4 37 0.7
6.5	252 21 50.0	3 9 1.3	287 34 8.7	5 1 10.8	338 47 18.3	4 18 0.7
7.0	258 34 42.6	3 35 23.5	294 8 56.0	5 10 24.9	345 47 26.5	3 55 2.5
7.5	264 51 36.2	3 59 28.0	300 48 3.2	5 15 36.5	352 50 6.5	3 28 22.9
8.0	271 12 57.6	4 20 53.7	307 31 39.9	5 16 33.4	359 55 9.8	2 58 22.9
8.5	277 39 13.2	4 39 19.8	314 19 53.7	5 13 6.2	7 2 25.7	2 25 27.9
9.0	284 10 47.6	4 54 25.6	321 12 49.4	5 5 8.7	14 11 40.8	1 50 7.5
9.5	290 48 3.3	5 5 51.1	328 10 28.7	4 52 38.3	21 22 38.3	1 12 55.0
10.0	297 31 19.4	5 13 17.5	335 12 48.8	4 35 36.9	28 34 57.5	−0 34 27.1
10.5	304 20 50.5	5 16 27.5	342 19 41.7	4 14 11.6	35 48 13.4	+0 4 37.3
11.0	311 16 44.9	5 15 6.2	349 30 53.7	3 48 34.8	43 1 56.9	0 43 37.4
11.5	318 19 3.4	5 9 2.0	356 46 4.5	3 19 4.7	50 15 34.6	1 21 52.6
12.0	325 27 38.4	4 58 7.4	4 4 46.6	2 46 6.1	57 28 29.8	1 58 42.5
12·5	332 42 12.5	4 42 20.5	11 26 25.6	2 10 9.7	64 40 2.9	2 33 29.0
13.0	340 2 17.7	4 21 46.0	18 50 20.6	1 31 51.9	71 49 33.0	3 5 37.4
13.5	347 27 15.2	3 56 35.8	26 15 44.5	0 51 53.9	78 56 19.1	3 34 37.5
14.0	354 56 16.4	3 27 9.5	33 41 45.3	−0 11 0.7	85 59 41.4	4 0 4.3
14.5	2 28 23.9	2 53 55.0	41 7 27.7	+0 30 0.7	92 59 3.4	4 21 38.2
15.0	10 2 32.8	2 17 27.8	48 31 54.5	1 10 23.5	99 53 52.9	4 39 5.8
15.5	17 37 33.5	1 38 29.9	55 54 8.9	1 49 21.9	106 43 43.8	4 52 19.2
16.0	25 12 14.3	0 57 48.3	63 13 16.5	2 26 13.8	113 28 16.6	5 1 16.1
16.5	32 45 24.1	−0 16 12.9	70 28 27.1	3 0 22.0	120 7 18.7	5 5 59.5
17.0	40 15 55.0	+0 25 25.7	77 38 56.2	3 31 14.9	126 40 45.3	5 6 35.8
17.5	47 42 44.6	1 6 18.4	84 44 6.5	3 58 27.6	133 8 38.7	5 3 14.8
18.0	55 4 58.1	1 45 39.4	91 43 28.9	4 21 42.1	139 31 8.4	4 56 9.0
18.5	62 21 49.7	2 22 48.2	98 36 43.4	4 40 46.6	145 48 30.3	4 45 32.4
19.0	69 32 43.6	2 57 10.4	105 23 38.7	4 55 35.2	152 1 5.9	4 31 40.2
19.5	76 37 14.4	3 28 17.7	112 4 12.2	5 6 7.2	158 9 21.5	4 14 48.4
20.0	83 35 6.9	3 55 49.0	118 38 29.4	5 12 26.1	164 13 47.4	3 55 13.1
20.5	90 26 15.4	4 19 29.6	125 6 42.7	5 14 39.0	170 14 57.6	3 33 10.6
21.0	97 10 43.0	4 39 9.9	131 29 11.0	5 12 55.3	176 13 28.3	3 8 56.9
21.5	103 48 40.4	4 54 45.4	137 46 18.6	5 7 26.2	182 9 57.7	2 42 48.0
22.0	110 20 24.3	5 6 15.6	143 58 33.9	4 58 24.3	188 5 5.2	2 14 59.8
22.5	116 46 16.5	5 13 43.5	150 6 28.3	4 46 3.1	193 59 30.5	1 45 48.2
23.0	123 6 43.0	5 17 14.2	156 10 35.7	4 30 36.4	199 53 53.3	1 15 29.2
23.5	129 22 12.5	5 16 55.1	162 11 31.7	4 12 18.1	205 48 52.8	0 44 19.2
24.0	135 33 15.6	5 12 54.7	168 9 52.9	3 51 22.6	211 45 6.8	+0 12 35.0
24.5	141 40 24.1	5 5 22.7	174 6 16.0	3 28 4.3	217 43 11.2	−0 19 25.6
25.0	147 44 9.9	4 54 29.6	180 1 17.4	3 2 37.8	223 43 39.8	0 51 24.1
25.5	153 45 4.9	4 40 26.8	185 55 32.5	2 35 17.9	229 47 3.6	1 23 0.9
26.0	159 43 40.4	4 23 26.1	191 49 35.6	2 6 20.1	235 53 50.1	1 53 55.6
26.5	165 40 26.6	4 3 39.8	197 43 59.5	1 36 0.5	242 4 22.8	2 23 46.7
27.0	171 35 52.5	3 41 21.0	203 39 14.9	1 4 35.6	248 19 1.0	2 52 11.7
27.5	177 30 25.3	3 16 43.4	209 35 50.3	+0 32 23.0	254 37 59.3	3 18 47.3
28.0	183 24 30.7	2 50 1.6	215 34 11.8	−0 0 18.9	261 1 26.9	3 43 10.2
28.5	189 18 32.6	2 21 31.1	221 34 42.8	0 33 10.6	267 29 27.5	4 4 56.9
29.0	195 12 53.4	1 51 28.0	227 37 43.7	1 5 51.4	274 1 59.3	4 23 44.7
29.5	201 7 53.8	1 20 9.6	233 43 32.1	1 37 59.9	280 38 55.1	4 39 12.0
30.0	207 3 52.9	0 47 54.2	239 52 22.7	2 9 13.9	287 20 2.7	4 50 59.7
30.5	213 1 8.2	+0 15 0.7	246 4 27.2	2 39 10.5	294 5 5.3	4 58 50.9
31.0	218 59 56.1	−0 18 10.8	252 19 54.0	3 7 26.7	300 53 42.3	5 2 32.3
31.5	225 0 31.8	−0 51 19.8	258 38 48.6	−3 33 39.2	307 45 30.9	−5 1 54.4

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	300° 53′ 42″.3	−5° 2′ 32″.3	353° 5′ 1″.6	−3° 2′ 29″.8	46° 32′ 57″.7	+1° 39′ 30″.9
1.5	307 45 30.9	5 1 54.4	0 17 23.0	2 30 50.0	53 39 18.2	2 15 0.6
2.0	314 40 6.5	4 56 52.4	7 28 51.1	1 56 47.7	60 41 27.5	2 48 6.3
2.5	321 37 4.0	4 47 25.9	14 38 59.8	1 20 58.3	67 39 22.0	3 18 21.3
3.0	328 35 58.9	4 33 39.8	21 47 28.9	0 43 58.9	74 33 2.6	3 45 23.8
3.5	335 36 28.1	4 15 43.5	28 54 3.3	−0 6 26.7	81 22 33.0	4 8 56.2
4.0	342 38 10.6	3 53 51.6	35 58 32.0	+0 31 1.3	88 7 59.4	4 28 45.0
4.5	349 40 48.1	3 28 22.8	43 0 48.0	1 7 49.5	94 49 29.4	4 44 40.6
5.0	356 44 4.8	2 59 39.9	50 0 47.2	1 43 24.0	101 27 11.2	4 56 37.1
5.5	3 47 47.7	2 28 9.3	56 58 27.1	2 17 13.2	108 1 12.9	5 4 31.8
6.0	10 51 46.1	1 54 20.4	63 53 45.8	2 48 48.4	114 31 42.5	5 8 25.2
6.5	17 55 50.7	1 18 45.2	70 46 41.5	3 17 43.6	120 58 47.5	5 8 20.6
7.0	24 59 53.4	0 41 57.3	77 37 11.8	3 43 36.4	127 22 35.0	5 4 24.0
7.5	32 3 46.4	−0 4 32.1	84 25 13.4	4 6 7.7	133 43 11.3	4 56 43.8
8.0	39 7 21.2	+0 32 54.5	91 10 41.4	4 25 1.9	140 0 42.5	4 45 30.4
8.5	46 10 28.2	1 9 46.8	97 53 29.4	4 40 7.2	146 15 14.5	4 30 56.5
9.0	53 12 55.5	1 45 29.7	104 33 29.7	4 51 15.9	152 26 53.4	4 13 16.5
9.5	60 14 28.7	2 19 29.3	111 10 33.8	4 58 23.8	158 35 45.7	3 52 46.3
10.0	67 14 51.1	2 51 14.1	117 44 32.7	5 1 30.5	164 41 59.0	3 29 42.9
10.5	74 13 42.9	3 20 15.2	124 15 17.4	5 0 39.1	170 45 42.1	3 4 24.2
11.0	81 10 41.8	3 46 7.4	130 42 39.8	4 55 56.1	176 47 5.3	2 37 9.0
11.5	88 5 23.8	4 8 29.4	137 6 33.3	4 47 30.9	182 46 20.7	2 8 16.6
12.0	94 57 23.9	4 27 4.4	143 26 53 6	4 35 35.5	188 43 42.9	1 38 6.5
12.5	101 46 17.1	4 41 40.4	149 43 39.5	4 20 24.4	194 39 28.5	1 6 58.1
13.0	108 31 39.3	4 52 10.2	155 56 53.0	4 2 13.4	200 33 56.6	0 35 10.8
13.5	115 13 9.2	4 58 31.4	162 6 39.8	3 41 19.7	206 27 28.8	+0 3 3.6
14.0	121 50 28.8	5 0 46.0	168 13 9.5	3 18 1.6	212 20 29.4	−0 29 4.7
14.5	128 23 24.2	4 58 59.9	174 16 35.9	2 52 37.8	218 13 25.0	1 0 55.8
15.0	134 51 46.8	4 53 22.5	180 17 16.7	2 25 27.1	224 6 44.6	1 32 11.5
15.5	141 15 33.6	4 44 6.1	186 15 33.3	1 56 48.3	230 0 59.5	2 2 34.2
16.0	147 34 47.4	4 31 25.1	192 11 50.8	1 26 59.9	235 56 43.0	2 31 46.2
16.5	153 49 36.6	4 15 35.4	198 6 37.7	0 56 20.2	241 54 30.1	2 59 30.0
17.0	160 0 15.2	3 56 54.2	204 0 25.8	+0 25 7.0	247 54 57.1	3 25 28.0
17.5	166 7 2.5	3 35 38.9	209 53 49.1	−0 6 22.0	253 58 40.7	3 49 22.6
18.0	172 10 22.5	3 12 7.2	215 47 24.2	0 37 49.5	260 6 18.0	4 10 55.7
18.5	178 10 43.2	2 46 37.0	221 41 49.5	1 8 58.2	266 18 25.6	4 29 49.2
19.0	184 8 36.5	2 19 25.7	227 37 44.9	1 39 30.9	272 25 38.3	4 45 44.7
19.5	190 4 37.1	1 50 50.5	233 35 50.9	2 9 9.8	278 58 28.5	4 58 23.5
20.0	195 59 22.5	1 21 8.4	239 36 48.1	2 37 37.0	285 27 25.6	5 7 27.5
20.5	201 53 31.9	0 50 36.1	245 41 16.8	3 4 33.9	292 2 54.2	5 12 39.1
21.0	207 47 45.8	+0 19 30.2	251 49 55.7	3 29 41.1	298 45 12.7	5 13 42.0
21.5	213 42 45.4	−0 11 52.4	258 3 21.2	3 52 38.6	305 34 31.9	5 10 22.2
22.0	219 39 12.0	0 43 14.6	264 22 6.6	4 13 5.9	312 30 54.0	5 2 28.6
22.5	225 37 46.4	1 14 18.7	270 46 40.7	4 30 41.8	319 34 11.4	4 49 54.3
23.0	231 39 8.1	1 44 46.4	277 17 26.9	4 45 5.0	326 44 6.0	4 32 38.0
23.5	237 43 54.5	2 14 18.6	283 54 41.9	4 55 54.6	334 0 8.8	4 10 44.5
24.0	243 52 40.2	2 42 35.1	290 38 34.4	5 2 50.7	341 21 39.7	3 44 26.1
24.5	250 5 56.2	3 9 14.8	297 29 4.1	5 5 35.7	348 47 48.6	3 14 3.3
25.0	256 24 9.3	3 33 55.7	304 26 1.1	5 3 54.7	356 17 37.0	2 40 4.1
25.5	262 47 40.7	3 56 15.3	311 29 5.5	4 57 36.8	3 49 59.8	2 3 4.3
26.0	269 16 45.6	4 15 50.6	318 37 47.1	4 46 36.6	11 23 47.7	1 23 46.0
26.5	275 51 32.0	4 32 18.9	325 51 26.4	4 30 54.8	18 57 50.1	0 42 55.9
27.0	282 32 0.3	4 45 18.4	333 9 15.6	4 10 39.1	26 30 57.8	−0 1 23.4
27.5	289 18 2.9	4 54 29.0	340 30 20.5	3 46 4.5	34 2 5.1	+0 40 1.1
28.0	296 9 23.9	4 59 33.3	347 53 42.8	3 17 33.6	41 30 12.5	1 20 28.7
28.5	303 5 39.5	5 0 17.1	355 18 22.1	2 45 35.5	48 54 28.4	1 59 15.0
29.0	310 6 19.1	4 56 30.9	2 43 18.5	2 10 45.5	56 14 9.7	2 35 39.7
29.5	317 10 46.1	4 48 10.6	10 7 35.4	1 33 43.2	63 28 43.0	3 9 8.4
30.0	324 18 19.4	4 35 17.9	17 30 21.1	0 55 11.2	70 37 44.6	3 39 13.3
30.5	331 28 15.2	4 18 0.5	24 50 50.3	−0 15 53.3	77 40 59.8	4 5 33.0
31.0	338 39 49.3	3 56 32.5	32 8 25.0	+0 23 27.0	84 38 22.5	4 27 52.1
31.5	345 52 18.3	−3 31 13.8	39 22 34.9	+1 2 8.0	91 29 53.7	+4 46 1.0

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	84° 38′ 22″.5	+4° 27′ 52″.1	133° 50′ 23″.8	+5° 3′ 16″.8	167° 21′ 56″.9	+3° 13′ 52″.3
1.5	91 29 53.7	4 46 1.0	140 9 48.0	4 51 9.3	173 24 14.4	2 47 11.6
2.0	98 15 40.4	4 59 54.7	146 24 19.4	4 35 43.1	179 23 24.0	2 18 54.4
2.5	104 55 54.4	5 9 32.4	152 34 29.4	4 17 15.1	185 20 4.8	1 49 18.9
3.0	111 30 51.2	5 14 56.9	158 40 50.3	3 56 2.5	191 14 55.2	1 18 42.9
3.5	118 0 48.8	5 16 13.9	164 43 54.0	3 32 22.6	197 8 32.2	0 47 24.0
4.0	124 26 6.8	5 13 31.3	170 44 11.5	3 6 32.9	203 1 31.1	+0 15 39.9
4.5	130 47 5.6	5 6 59.1	176 42 13.0	2 38 50.9	208 54 24.7	−0 16 11.7
5.0	137 4 6.1	4 56 49.0	182 38 27.2	2 9 34.3	214 47 43.3	0 47 52.7
5.5	143 17 29.3	4 43 13.8	188 33 21.4	1 39 1.2	220 41 54.6	1 19 5.0
6.0	149 27 35.6	4 26 27.7	194 27 20.8	1 7 29.9	226 37 23.1	1 49 30.0
6.5	155 34 44.6	4 6 45.9	200 20 48.7	0 35 19.0	232 34 30.1	2 18 48.9
7.0	161 39 15.4	3 44 24.4	206 14 6.4	+0 2 47.8	238 33 34.2	2 46 42.7
7.5	167 41 26.2	3 19 40.2	212 7 33.8	−0 29 44.6	244 34 50.8	3 12 52.5
8.0	173 41 34.3	2 52 50.8	218 1 28.9	1 1 59.2	250 38 32.3	3 36 59.6
8.5	179 39 56.2	2 24 14.5	223 56 8.2	1 33 36.2	256 44 48.5	3 58 45.8
9.0	185 36 48.0	1 54 10.2	229 51 47.2	2 4 16.2	262 53 46.7	4 17 53.5
9.5	191 32 25.3	1 22 57.1	235 48 40.4	2 33 39.8	269 5 31.9	4 34 6.3
10.0	197 27 3.8	0 50 54.5	241 47 1.8	3 1 28.1	275 20 7.4	4 47 9.1
10.5	203 20 59.3	+0 18 22.2	247 47 5.1	3 27 22.7	281 37 35.5	4 56 48.7
11.0	209 14 28.0	−0 14 20.2	253 49 3.8	3 51 5.7	287 57 57.8	5 2 53.6
11.5	215 7 46.8	0 46 53.0	259 53 11.6	4 12 20.0	294 21 15.7	5 5 14.6
12.0	221 1 13.7	1 18 57.0	265 59 42.8	4 30 49.5	300 47 30.7	5 3 45.0
12.5	226 55 7.8	1 50 13.2	272 8 52.4	4 46 19.0	307 16 45.2	4 58 20.8
13.0	232 49 49.5	2 20 22.8	278 20 56.2	4 58 34.7	313 49 2.8	4 49 0.7
13.5	238 45 40.8	2 49 7.5	284 36 10.9	5 7 23.9	320 24 28.2	4 35 46.4
14.0	244 43 5.1	3 16 9.6	290 54 54.2	5 12 35.4	327 3 7.3	4 18 42.7
14.5	250 42 27.6	3 41 11.7	297 17 24.6	5 13 59.4	333 45 7.1	3 57 57.5
15.0	256 44 14.8	4 3 57.0	303 44 1.0	5 11 28.0	340 30 35.4	3 33 42.1
15.5	262 48 54.6	4 24 8.9	310 15 2.1	5 4 55.3	347 19 40.0	3 6 11.3
16.0	268 56 55.9	4 41 31.2	316 50 46.4	4 54 17.6	354 12 28.4	2 35 43.6
16.5	275 8 48.1	4 55 48.2	323 31 31.2	4 39 34.0	1 9 6.8	2 2 41.1
17.0	281 25 0.8	5 6 44.7	330 17 31.9	4 20 46.6	8 9 38.6	1 27 29.6
17.5	287 46 3.4	5 14 6.0	337 9 0.8	3 58 1.5	15 14 3.4	0 50 38.9
18.0	294 12 23.7	5 17 38.4	344 6 5.9	3 31 28.9	22 22 16.1	−0 12 42.1
18.5	300 44 27.6	5 17 9.4	351 8 50.0	3 1 23.9	29 34 5.6	+0 25 44.2
19.0	307 22 38.0	5 12 28.3	358 17 8.9	2 28 6.9	36 49 13.5	1 4 0.9
19.5	314 7 13.4	5 3 26.4	5 30 50.8	1 52 4.1	44 7 13.4	1 41 27.2
20.0	320 58 26.7	4 49 58.3	12 49 34.8	1 13 47.5	51 27 31.3	2 17 21.5
20.5	327 56 24.2	4 32 2.7	20 12 50.5	−0 33 54.9	58 49 24.7	2 51 3.2
21.0	335 1 3.7	4 9 43.1	27 39 58.0	+0 6 51.3	66 12 4.4	3 21 53.7
21.5	342 12 13.8	3 43 8.8	35 10 7.8	0 47 44.8	73 34 35.5	3 49 18.4
22.0	349 29 32.7	3 12 35.9	42 42 22.3	1 27 57.1	80 55 59.1	4 12 47.6
22.5	356 52 28.0	2 38 27.9	50 15 36.7	2 6 39.5	88 15 15.1	4 31 58.2
23.0	4 20 16.8	2 1 15.8	57 48 41.4	2 43 5.2	95 31 24.6	4 46 34.0
23.5	11 52 6.4	1 21 37.5	65 20 25.1	3 16 31.3	102 43 32.5	4 56 26.2
24.0	19 26 55.4	−0 40 17.2	72 49 37.1	3 46 20.8	109 50 49.6	5 1 33.4
24.5	27 3 35.3	+0 1 56.0	80 15 9.9	4 12 3.6	116 52 34.8	5 2 0.6
25.0	34 40 53.6	0 44 10.2	87 36 2.5	4 33 17.8	123 48 16.6	4 57 58.6
25.5	42 17 35.8	1 25 33.3	94 51 29.5	4 49 49.8	130 37 33.4	4 49 43.1
26.0	49 52 28.3	2 5 14.8	102 0 28.1	5 1 33.6	137 20 14.4	4 37 32.9
26.5	57 24 21.2	2 42 28.6	109 2 48.7	5 8 30.7	143 56 18.6	4 21 49.5
27.0	64 52 10.7	3 16 34.3	115 58 5.4	5 10 48.2	150 25 54.5	4 2 55.6
27.5	72 15 1.7	3 46 59.0	122 46 10.6	5 8 38.4	156 49 18.6	3 41 14.2
28.0	79 32 9.0	4 13 17.4	129 27 7.2	5 2 16.7	163 6 54.7	3 17 8.3
28.5	86 42 57.9	4 35 12.1	136 1 7.4	4 52 1.2	169 19 12.4	2 51 0.5
29.0	93 47 5.5	4 52 33.2	142 28 31.2	4 38 11.4	175 26 45.9	2 23 12.3
29.5	100 44 19.3	5 5 17.2	148 49 45.2	4 21 7.4	181 30 12.8	1 54 4.2
30.0	107 34 37.1	5 13 26.6	155 5 20.5	4 1 9.6	187 30 13.5	1 23 55.8
30.5	114 18 5.7	5 17 7.8	161 15 51.9	3 38 38.0	193 27 29.9	0 53 5.6
31.0	120 54 59.0	5 16 31.2	167 21 56.9	3 13 52.3	199 22 44.3	+0 21 51.7
31.5	127 25 36.8	+5 11 49.4	173 24 14.4	+2 47 11.6	205 16 39.1	−0 9 28.6

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

Mean Noon.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1874.	23° 27′						
Jan. 0	26″.16	—10″.90	—0ˢ.67	0″.00	—20″80	9″.00	42° 1′.5
10	26.30	10.37	0.63	1.38	20.79	9.00	41 29.7
20	26.49	9.93	0.61	2.75	20.77	8.99	40 57.9
30	26.72	9.65	0.59	4.13	20.74	8.98	40 26.1
Feb 9	26.95	9.52	0.58	5.50	20.71	8.96	39 54.4
19	27.17	9.54	0.58	6.88	—20.67	8.94	39 22.6
Mar. 1	27.36	9.70	0.59	8.26	20.63	8.92	38 50.8
11	27.49	9.96	0.61	9.63	20.57	8.90	38 19.0
21	27.56	10.27	0.63	11.01	20.51	8.87	37 47.3
31	27.56	10.57	0.65	12.38	20.45	8.85	37 15.5
Apr. 10	27.50	10.81	0.66	13.76	—20.39	8.82	36 43.8
20	27.39	10.96	0.67	15.14	20.34	8.80	36 12.0
30	27.25	10.99	0.67	16.51	20.29	8.78	35 40.3
May 10	27.10	10.87	0.67	17.89	20.24	8.76	35 8.5
20	26.96	10.62	0.65	19.26	20.19	8.74	34 36.7
30	26.86	10.25	0.63	20.64	—20.16	8.72	34 4.9
June 9	26.79	9.79	0.60	22.02	20.13	8.71	33 33.2
19	26.78	9.27	0.57	23.39	20.11	8.71	33 1.4
29	26.83	8.75	0.54	24.77	20.11	8.70	32 29.6
July 9	26.94	8.26	0.51	26.14	20.10	8.70	31 57.8
19	27.09	7.85	0.48	27.52	—20.12	8.71	31 26.1
29	27.28	7.55	0.46	28.90	20.14	8.72	30 54.3
Aug. 8	27.49	7.37	0.45	30.27	20.17	8.73	30 22.5
18	27.70	7.33	0.45	31.65	20.20	8.75	29 50.7
28	27.89	7.42	0.45	33.02	20.24	8.77	29 19.0
Sept. 7	28.03	7.62	0.47	34.40	—20.29	8.79	28 47.2
17	28.12	7.89	0.48	35.78	20.35	8.81	28 15.4
27	28.15	8.19	0.50	37.15	20.41	8.84	27 43.6
Oct. 7	28.12	8.46	0.52	38.53	20.47	8.87	27 11.9
17	28.02	8.66	0.53	39.90	20.53	8.88	26 40.1
27	27.88	8.75	0.54	41.28	—20.59	8.91	26 8.3
Nov. 6	27.72	8.69	0.53	42.46	20.64	8.93	25 36.5
16	27.55	8.46	0.52	44.03	20.69	8.95	25 4.8
26	27.40	8.09	0.50	45.41	20.73	8.97	24 33.0
Dec. 6	27.29	7.59	0.46	46.78	20.76	8.98	24 1.2
16	27.24	7.00	0.43	48.16	—20.78	8.99	23 29.4
26	27.26	6.38	0.39	49.54	20.79	9.00	22 57.7
36	27.34	— 5.78	—0.35	50.91	—20.79	9.00	22 25.9

Mean Obliquity, 1874.0, 23° 27′ 19″.85 Motion in 100 days,—0″.1272
Precession for 1874.5, . . . 50″.2580 Log. 1.70121
Precession in a Solar Day, . 0″.13760 Log. 9.13863
Precession in a Sidereal Day, 0″.13722 Log. 9.13744
Sun's Mean Hor. Parallax, . 8″.848

Daily Motion.
—3′.177

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	A.	B.	C.	D.	Solar day. Sid. hour.	A.	B.	C.	D.
Jan. 0	*n* 9.3300	*n* 0.8010	*n* 0.5415	1.3030	Mar. 1	*n* 8.4260	*n* 0.8811	*n* 1.2501	0.8122
1	9.3221	0.8019	0.5805	1.3015	2	8.3870	0.8821	1.2525	0.7889
2	9.3141	0.8028	0.6162	1.2998	3	8.3446	0.8830	1.2549	0.7641
3	9.3060	0.8038	0.6490	1.2980	4	8.2978	0.8839	1.2570	0.7376
h 4	9.2977	0.8048	0.6794	1.2960	h 5	8.2458	0.8847	1.2591	0.7093
(7.0) 5	9.2893	0.8059	0.7077	1.2939	(11.0) 6	*n* 8.1870	0.8855	1.2610	0.6787
6	*n* 9.2808	*n* 0.8070	*n* 0.7342	1.2916	7	8.1199	*n* 0.8863	*n* 1.2627	0.6461
7	9.2722	0.8081	0.7590	1.2892	8	8.0406	0.8871	1.2643	0.6104
8	9.2634	0.8093	0.7823	1.2867	9	7.9440	0.8878	1.2658	0.5715
9	9.2545	0.8105	0.8043	1.2840	10	7.8209	0.8884	1.2671	0.5286
10	9.2454	0.8117	0.8251	1.2811	11	*n* 7.6484	0.8891	1.2683	0.4809
11	*n* 9.2363	*n* 0.8130	*n* 0.8448	1.2781	12	7.3617	*n* 0.8897	*n* 1.2694	0.4272
12	9.2270	0.8143	0.8635	1.2749	13	*n* 6.1761	0.8902	1.2703	0.3658
13	9.2175	0.8156	0.8814	1.2715	14	*p* 7.2989	0.8907	1.2711	0.2941
14	9.2078	0.8169	0.8984	1.2680	15	7.6160	0.8912	1.2718	0.2079
15	9.1980	0.8183	0.9146	1.2643	16	7.7966	0.8916	1.2723	0.1004
16	*n* 9.1881	*n* 0.8197	*n* 0.9301	1.2605	17	7.9232	*n* 0.8921	*n* 1.2727	9.9570
17	9.1781	0.8211	0.9449	1.2565	18	8.0212	0.8924	1.2730	9.7415
18	9.1679	0.8225	0.9591	1.2523	19	8.1011	0.8928	1.2731	*p* 9.2947
h 19	9.1575	0.8240	0.9727	1.2479	20	8.1685	0.8931	1.2731	*n* 9.1959
(8.0) 20	9.1469	0.8255	0.9858	1.2434	h 21	8.2269	0.8933	1.2730	9.7082
21	*n* 9.1362	*n* 0.8270	*n* 0.9983	1.2386	(12.0) 22	8.2783	*n* 0.8935	*n* 1.2727	*n* 9.9366
22	9.1253	0.8285	1.0104	1.2337	23	8.3243	0.8937	1.2724	0.0854
23	9.1141	0.8300	1.0220	1.2286	24	8.3661	0.8939	1.2719	0.1958
24	9.1028	0.8315	1.0331	1.2233	25	8.4043	0.8940	1.2712	0.2836
25	9.0913	0.8330	1.0439	1.2177	26	8.4395	0.8940	1.2704	0.3565
26	*n* 9.0796	*n* 0.8346	*n* 1.0542	1.2120	27	8.4720	*n* 0.8941	*n* 1.2695	*n* 0.4187
27	9.0676	0.8361	1.0642	1.2061	28	8.5024	0.8941	1.2685	0.4730
28	9.0555	0.8377	1.0738	1.1999	29	8.5310	0.8940	1.2673	0.5211
29	9.0431	0.8392	1.0831	1.1935	30	8.5579	0.8940	1.2660	0.5642
30	9.0306	0.8408	1.0920	1.1869	31	8.5833	0.8939	1.2646	0.6034
31	*n* 9.0177	*n* 0.8424	*n* 1.1006	1.1800	Apr. 1	8.6074	*n* 0.8937	*n* 1.2631	*n* 0.6391
Feb. 1	9.0047	0.8439	1.1090	1.1729	2	8.6304	0.8936	1.2614	0.6720
2	8.9913	0.8455	1.1170	1.1656	3	8.6524	0.8933	1.2595	0.7024
h 3	8.9777	0.8470	1.1247	1.1579	h 4	8.6735	0.8931	1.2576	0.7307
(9.0) 4	8.9638	0.8485	1.1322	1.1501	(13.0) 5	8.6936	0.8928	1.2555	0.7571
5	*n* 8.9496	*n* 0.8501	*n* 1.1394	1.1419	6	8.7131	*n* 0.8925	*n* 1.2532	*n* 0.7819
6	8.9351	0.8516	1.1464	1.1334	7	8.7318	0.8922	1.2508	0.8052
7	8.9202	0.8531	1.1531	1.1247	8	8.7499	0.8919	1.2483	0.8272
8	8.9050	0.8546	1.1596	1.1156	9	8.7673	0.8915	1.2457	0.8480
9	8.8894	0.8561	1.1658	1.1062	10	8.7843	0.8911	1.2429	0.8677
10	*n* 8.8734	*n* 0.8575	*n* 1.1718	1.0964	11	8.8009	*n* 0.8906	*n* 1.2399	*n* 0.8865
11	8.8569	0.8590	1.1776	1.0863	12	8.8169	0.8902	1.2368	0.9043
12	8.8400	0.8604	1.1832	1.0758	13	8.8325	0.8897	1.2336	0.9213
13	8.8227	0.8618	1.1886	1.0649	14	8.8475	0.8892	1.2302	0.9375
14	8.8048	0.8632	1.1938	1.0536	15	8.8623	0.8886	1.2266	0.9530
15	*n* 8.7864	*n* 0.8646	*n* 1.1987	1.0418	16	8.8767	*n* 0.8881	*n* 1.2230	*n* 0.9679
16	8.7672	0.8660	1.2035	1.0296	17	8.8908	0.8875	1.2191	0.9821
17	8.7475	0.8673	1.2081	1.0169	18	8.9045	0.8869	1.2151	0.9957
h 18	8.7271	0.8686	1.2126	1.0038	19	8.9180	0.8863	1.2109	1.0088
(10.0) 19	8.7059	0.8699	1.2168	0.9900	h 20	8.9312	0.8856	1.2066	1.0214
20	*n* 8.6837	*n* 0.8712	*n* 1.2209	0.9757	(14.0) 21	8.9441	*n* 0.8850	*n* 1.2021	*n* 1.0335
21	8.6606	0.8724	1.2248	0.9607	22	8.9568	0.8843	1.1974	1.0451
22	8.6365	0.8736	1.2285	0.9451	23	8.9693	0.8836	1.1925	1.0564
23	8.6113	0.8747	1.2321	0.9288	24	8.9815	0.8829	1.1875	1.0672
24	8.5849	0.8759	1.2355	0.9117	25	8.9935	0.8822	1.1823	1.0776
25	*n* 8.5570	*n* 0.8770	*n* 1.2387	0.8938	26	9.0053	*n* 0.8814	*n* 1.1769	*n* 1.0876
26	8.5274	0.8781	1.2418	0.8750	27	9.0169	0.8807	1.1713	1.0973
27	8.4958	0.8791	1.2447	0.8552	28	9.0283	0.8799	1.1655	1.1066
28	8.4621	0.8801	1.2475	0.8343	29	9.0395	0.8792	1.1595	1.1157
29	8.4260	0.8811	1.2501	0.8122	30	9.0506	0.8784	1.1533	1.1244
30	*n* 8.3870	*n* 0.8821	*n* 1.2525	0.7889	31	9.0614	*n* 0.8776	*n* 1.1469	*n* 1.1328

January 0 to June 14, E = —0″.03.

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	A.	B.	C.	D.	Solar day. Sid. hour.	A.	B.	C.	D.
May 1	9.0614	n 0.8776	n 1.1469	n 1.1328	July 1	9.5174	n 0.8600	0.5169	n 1.3038
2	9.0721	0.8768	1.1402	1.1410	2	9.5223	0.8607	0.5556	1.3025
3	9.0827	0.8760	1.1334	1.1488	3	9.5272	0.8614	0.5911	1.3010
4	9.0931	0.8752	1.1263	1.1563	4	9.5319	0.8621	0.6237	1.2994
h 5	9.1034	0.8744	1.1189	1.1637	h 5	9.5366	0.8629	0.6540	1.2977
(15.0) 6	9.1135	n 0.8736	n 1.1114	n 1.1708	(19.0) 6	9.5413	n 0.8636	0.6822	n 1.2958
7	9.1235	0.8729	1.1035	1.1776	7	9.5458	0.8644	0.7086	1.2938
8	9.1333	0.8721	1.0954	1.1842	8	9.5503	0.8653	0.7333	1.2917
9	9.1431	0.8713	1.0870	1.1906	9	9.5548	0.8662	0.7566	1.2895
10	9.1527	0.8705	1.0784	1.1968	10	9.5591	0.8670	0.7786	1.2871
11	9.1621	n 0.8697	n 1.0694	n 1.2028	11	9.5634	n 0.8680	0.7994	n 1.2846
12	9.1715	0.8689	1.0601	1.2086	12	9.5677	0.8689	0.8192	1.2819
13	9.1807	0.8682	1.0505	1.2141	13	9.5719	0.8699	0.8380	1.2791
14	9.1898	0.8674	1.0406	1.2195	14	9.5760	0.8709	0.8558	1.2762
15	9.1988	0.8667	1.0303	1.2247	15	9.5801	0.8719	0.8729	1.2732
16	9.2077	n 0.8659	n 1.0196	n 1.2297	16	9.5841	n 0.8729	0.8892	n 1.2700
17	9.2164	0.8652	1.0086	1.2345	17	9.5880	0.8740	0.9048	1.2666
18	9.2251	0.8645	0.9971	1.2391	18	9.5919	0.8751	0.9198	1.2631
19	9.2337	0.8638	0.9852	1.2436	19	9.5957	0.8762	0.9341	1.2594
h 20	9.2421	0.8631	0.9728	1.2479	h 20	9.5995	0.8773	0.9479	1.2556
(16.0) 21	9.2505	n 0.8624	n 0.9600	n 1.2520	(20.0) 21	9.6032	n 0.8784	0.9611	n 1.2517
22	9.2587	0.8618	0.9467	1.2560	22	9.6068	0.8796	0.9738	1.2476
23	9.2668	0.8612	0.9328	1.2598	23	9.6105	0.8807	0.9860	1.2433
24	9.2749	0.8606	0.9183	1.2635	24	9.6140	0.8819	0.9978	1.2388
25	9.2829	0.8600	0.9032	1.2670	25	9.6175	0.8831	1.0092	1.2342
26	9.2907	n 0.8594	n 0.8875	n 1.2703	26	9.6209	n 0.8843	1.0202	n 1.2294
27	9.2985	0.8589	0.8710	1.2735	27	9.6243	0.8855	1.0307	1.2244
28	9.3062	0.8584	0.8537	1.2766	28	9.6276	0.8867	1.0409	1.2193
29	9.3138	0.8579	0.8357	1.2795	29	9.6309	0.8879	1.0508	1.2140
30	9.3212	0.8574	0.8167	1.2823	30	9.6341	0.8891	1.0603	1.2084
31	9.3286	n 0.8570	n 0.7967	n 1.2849	31	9.6373	n 0.8904	1.0695	n 1.2027
June 1	9.3360	0.8566	0.7757	1.2874	Aug. 1	9.6404	0.8916	1.0784	1.1968
2	9.3432	0.8562	0.7534	1.2898	2	9.6435	0.8929	1.0870	1.1907
3	9.3503	0.8559	0.7298	1.2920	3	9.6465	0.8941	1.0953	1.1843
h 4	9.3573	0.8556	0.7048	1.2941	h 4	9.6495	0.8953	1.1033	1.1778
(17.0) 5	9.3643	n 0.8553	n 0.6781	n 1.2961	(21.0) 5	9.6525	n 0.8966	1.1111	n 1.1710
6	9.3712	0.8550	0.6495	1.2980	6	9.6554	0.8978	1.1186	1.1640
7	9.3780	0.8548	0.6188	1.2997	7	9.6582	0.8990	1.1259	1.1567
8	9.3847	0.8546	0.5857	1.3012	8	9.6610	0.9003	1.1330	1.1492
9	9.3913	0.8544	0.5496	1.3027	9	9.6638	0.9015	1.1398	1.1415
10	9.3978	n 0.8543	n 0.5102	n 1.3040	10	9.6665	n 0.9027	1.1464	n 1.1334
11	9.4043	0.8542	0.4667	1.3052	11	9.6691	0.9039	1.1527	1.1251
12	9.4107	0.8542	0.4182	1.3063	12	9.6717	0.9051	1.1589	1.1165
13	9.4170	0.8542	0.3635	1.3073	13	9.6743	0.9063	1.1649	1.1076
14	9.4232	0.8542	0.3008	1.3081	14	9.6769	0.9075	1.1706	1.0984
15	9.4293	n 0.8542	n 0.2273	n 1.3088	15	9.6794	n 0.9087	1.1762	n 1.0888
16	9.4354	0.8543	0.1387	1.3094	16	9.6818	0.9098	1.1816	1.0789
17	9.4414	0.8545	0.0271	1.3099	17	9.6843	0.9110	1.1868	1.0687
18	9.4473	0.8546	9.8765	1.3102	18	9.6867	0.9121	1.1918	1.0580
19	9.4531	0.8548	9.6438	1.3105	19	9.6890	0.9132	1.1966	1.0470
h 20	9.4589	n 0.8551	n 9.1079	n 1.3106	20	9.6913	n 0.9143	1.2013	n 1.0355
(18.0) 21	9.4646	0.8553	p 9.2650	1.3106	h 21	9.6936	0.9154	1.2058	1.0237
22	9.4702	0.8557	9.6957	1.3104	(22.0) 22	9.6959	0.9165	1.2101	1.0113
23	9.4757	0.8560	9.9076	1.3102	23	9.6981	0.9175	1.2142	0.9985
24	9.4812	0.8564	0.0492	1.3098	24	9.7003	0.9185	1.2183	0.9851
25	9.4866	n 0.8568	0.1557	n 1.3093	25	9.7025	n 0.9195	1.2221	n 0.9712
26	9.4919	0.8572	0.2411	1.3087	26	9.7046	0.9205	1.2258	0.9566
27	9.4971	0.8577	0.3123	1.3080	27	9.7067	0.9215	1.2293	0.9415
28	9.5023	0.8583	0.3733	1.3071	28	9.7088	0.9224	1.2327	0.9256
29	9.5074	0.8588	0.4267	1.3061	29	9.7108	0.9233	1.2360	0.9090
30	9.5125	n 0.8594	0.4742	n 1.3050	30	9.7128	n 0.9242	1.2391	n 0.8917
31	9.5174	n 0.8600	0.5169	n 1.3038	31	9.7148	n 0.9251	1.2420	n 0.8734

January 1 to June 14, E = —0″.03.

June 15 to December 32, E = —0″.02.

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	A.	B.	C.	D.	Solar day. Sid. hour.	A.	B.	C.	D.
Sept. 1	9.7168	*n* 0.9259	1.2448	*n* 0.8542	Nov. 1	9.8219	*n* 0.9212	1.1596	1 1154
2	9.7187	0.9267	1.2475	0.8341	2	9.8238	0.9204	1.1532	1.1244
3	9.7206	0.9275	1.2500	0.8128	3	9.8257	0.9196	1.1466	1.1331
h 4	9.7225	0.9283	1.2524	0.7902	h 4	9.8277	0.9188	1.1397	1.1415
(23.0) 5	9.7244	0.9290	1.2547	0.7662	(3.0) 5	9.8296	0.9179	1.1326	1.1496
6	9.7263	*n* 0.9297	1.2568	*n* 0.7407	6	9.8315	*n* 0.9171	1.1252	1.1575
7	9.7281	0.9304	1.2588	0.7134	7	9.8335	0.9163	1.1175	1.1651
8	9.7299	0.9310	1.2606	0.6841	8	9.8354	0.9154	1.1096	1.1724
9	9.7317	0.9317	1.2624	0.6526	9	9.8374	0.9146	1.1014	1.1794
10	9.7335	0.9323	1.2640	0.6186	10	9.8394	0.9138	1.0928	1.1863
11	9.7353	*n* 0.9328	1.2655	*n* 0.5814	11	9.8414	*n* 0.9129	1.0840	1.1929
12	9.7370	0.9333	1.2668	0.5406	12	9.8434	0.9121	1.0748	1.1992
13	9.7387	0.9338	1.2680	0.4954	13	9.8454	0.9113	1.0653	1.2054
14	9.7405	0.9343	1.2691	0.4447	14	9.8475	0.9105	1.0555	1.2113
15	9.7422	0.9347	1.2700	0.3871	15	9.8495	0.9096	1.0453	1.2170
16	9.7439	*n* 0.9351	1.2709	*n* 0.3206	16	9.8515	*n* 0.9088	1.0346	1.2225
17	9.7456	0.9355	1.2716	0.2418	17	9.8536	0.9080	1.0236	1.2278
18	9.7472	0.9358	1.2721	0.1453	18	9.8557	0.9073	1.0122	1.2329
h 19	9.7489	0.9361	1.2726	0.0208	h 19	9.8577	0.9065	1.0003	1.2379
(0.0) 20	9.7506	0.9364	1.2729	9.8452	(4.0) 20	9.8598	0.9057	0.9879	1.2426
21	9.7522	*n* 0.9366	1.2731	*n* 9.5454	21	9.8619	*n* 0.9050	0.9750	1.2472
22	9.7538	0.9368	1.2731	*n* 7.2041	22	9.8640	0.9043	0.9616	1.2515
23	9.7555	0.9370	1.2731	*p* 9.5417	23	9.8661	0.9036	0.9476	1.2557
24	9.7571	0.9371	1.2729	9.8437	24	9.8682	0.9029	0.9329	1.2598
25	9.7588	0.9372	1.2726	0.0201	25	9.8703	0.9022	0.9177	1.2636
26	9.7604	*n* 0.9373	1.2721	0.1452	26	9.8724	*n* 0.9016	0.9017	1.2673
27	9.7620	0.9373	1.2716	0.2422	27	9.8745	0.9010	0.8850	1.2708
28	9.7636	0 9373	1.2708	0.3213	28	9.8766	0.9004	0.8674	1.2742
29	9.7652	0.9373	1.2700	0.3882	29	9.8788	0.8998	0.8490	1.2774
30	9.7668	0.9373	1.2690	0.4460	30	9.8809	0.8992	0.8296	1.2804
Oct. 1	9.7685	*n* 0.9372	1.2680	0.4970	Dec. 1	9.8830	*n* 0.8987	0.8091	1.2833
2	9.7701	0.9370	1.2667	0.5425	2	9.8852	0.8982	0.7875	1.2861
3	9.7717	0.9369	1.2654	0.5836	3	9.8873	0.8978	0.7646	1.2887
h 4	9.7734	0.9367	1.2639	0.6211	h 4	9.8894	0.8973	0.7402	1.2911
(1.0) 5	9.7750	0.9365	1.2622	0.6554	(5.0) 5	9.8916	0.8969	0.7143	1.2934
6	9.7766	*n* 0.9362	1.2605	0.6871	6	9.8937	*n* 0.8966	0.6866	1.2955
7	9.7783	0.9360	1.2586	0.7166	7	9.8958	0.8962	0.6568	1.2975
8	9.7799	0.9357	1.2565	0.7441	8	9.8979	0.8959	0.6246	1.2993
9	9.7815	0.9353	1.2543	0.7699	9	9.9001	0.8956	0.5898	1.3010
10	9.7832	0.9350	1.2520	0.7941	10	9.9022	0.8954	0.5517	1.3026
11	9.7849	*n* 0.9346	1.2495	0.8169	11	9.9043	*n* 0.8952	0.5098	1.3040
12	9.7865	0.9342	1.2469	0.8385	12	9.9064	0.8950	0.4633	1.3053
13	9.7882	0.9337	1.2442	0.8589	13	9.9086	0.8949	0.4110	1.3065
14	9.7899	0.9332	1.2412	0.8783	14	9.9107	0.8948	0.3514	1.3075
15	9.7916	0.9328	1.2382	0.8968	15	9.9128	0.8948	0.2821	1.3083
16	9.7933	*n* 0.9322	1.2350	0.9144	16	9.9149	*n* 0.8947	0.1994	1.3090
17	9.7950	0.9317	1.2316	0.9312	17	9.9169	0.8948	0.0970	1.3096
18	9.7967	0.9311	1.2280	0.9472	18	9.9190	0.8948	9.9627	1.3101
h 19	9.7984	0.9305	1.2243	0.9626	h 19	9.9211	0.8949	9.7669	1.3104
(2.0) 20	9.8002	0.9299	1.2205	0 9773	(6.0) 20	9.9232	0.8950	*p* 9.4004	1.3106
21	9.8019	*n* 0.9293	1.2164	0.9914	21	9.9252	*n* 0.8952	*n* 8.9138	1.3106
22	9.8037	0.9286	1.2122	1.0049	22	9.9273	0.8954	9.6185	1.3105
23	9.8055	0.9280	1.2078	1.0179	23	9.9293	0.8957	9.8743	1.3103
24	9.8073	0.9273	1.2032	1.0304	24	9.9313	0.8960	0.0341	1.3099
25	9.8090	0.9266	1.1985	1.0425	25	9.9333	0.8963	0.1506	1.3094
26	9.8109	*n* 0.9258	1.1936	1.0541	26	9.9353	*n* 0.8966	*n* 0.2422	1.3087
27	9.8127	0.9251	1.1884	1.0652	27	9.9373	0.8970	0.3178	1.3079
28	9.8145	0.9244	1.1831	1.0760	28	9.9393	0.8975	0.3820	1.3070
29	9.8163	0.9236	1.1775	1.0864	29	9.9412	0.8979	0.4379	1.3059
30	9.8182	0.9228	1.1718	1.0964	30	9.9432	0.8984	0.4872	1.3047
31	9.8201	*n* 0.9220	1.1658	1.1061	31	9.9452	*n* 0.8990	*n* 0.5314	1.3033
32	9.8219	*n* 0.9212	1.1596	1.1154	32	9.9471	*n* 0.8996	*n* 0.5714	1.3019

June 15 to December 32. E = —0″.02.

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
Jan. 0	0.0019	−9.88	0.8831	235 52	1.3094	350 11	n 0.1787	−1.51	−0.659	15 43.5	23 20.7
1	.0046	9.70	.8813	236 24	.3092	349 14	.2180	1.65	.647	45.6	16.9
2	.0074	9.53	.8795	236 54	.3089	348 18	.2538	1.79	.635	47.7	13.2
3	.0101	9.35	.8778	237 29	.3086	347 21	.2865	1.93	.623	49.9	9.4
h 4	.0129	9.17	.8762	238 3	.3083	346 24	.3168	2.07	.612	52.2	5.6
(7.0) 5	.0156	−9.00	0.8747	238 36	1.3080	345 28	n 0.3452	−2.21	−0.600	15 54.4	23 1.8
6	.0183	8.83	.8732	239 10	.3077	344 31	.3714	2.35	.588	56.7	22 58.1
7	.0211	8.65	.8718	239 43	.3073	343 34	.3962	2.49	.577	15 58.9	54.3
8	.0238	8.48	.8705	240 18	.3070	342 37	.4195	2.63	.565	16 1.2	50.5
9	.0265	8.31	.8692	240 52	.3066	341 40	.4415	2.76	.554	3.5	46.7
10	.0293	−8.14	0.8681	241 26	1.3062	340 43	n 0.4624	−2.90	−0.542	16 5.9	22 42.9
11	.0320	7.97	.8670	242 1	.3058	339 46	.4822	3.03	.531	8.1	39.1
12	.0348	7.80	.8660	242 35	.3053	338 48	.5011	3.17	.520	10.3	35.2
13	.0375	7.63	.8651	243 10	.3048	337 51	.5189	3.30	.508	12.7	31.4
14	.0402	7.46	.8642	243 45	.3044	336 53	.5358	3.43	.497	15.0	27.5
15	.0430	−7.30	0.8635	244 19	1.3039	335 55	n 0.5521	−3.56	−0.486	16 17.3	22 23.7
16	.0457	7.13	.8628	244 54	.3034	334 57	.5675	3.69	.475	19.6	19.8
17	.0484	6.97	.8622	245 29	.3029	333 59	.5823	3.82	.464	21.9	15.9
18	.0512	6.81	.8616	246 3	.3023	333 1	.5965	3.95	.454	24.2	12.1
h 19	.0539	6.65	.8612	246 38	.3018	332 3	.6100	4.07	.443	26.5	8.2
(8.0) 20	.0567	−6.49	0.8608	247 12	1.3012	331 4	n 0.6232	−4.20	−0.432	16 28.8	22 4.3
21	.0594	6.33	.8605	247 46	.3007	330 6	.6358	4.32	.422	31.1	22 0.4
22	.0621	6.18	.8603	248 20	.3001	329 7	.6478	4.44	.411	33.3	21 56.5
23	.0649	6.02	.8601	248 54	.2995	328 9	.6594	4.56	.401	35.6	52.6
24	.0676	5.87	.8600	249 28	.2989	327 10	.6706	4.68	.391	37.9	48.6
25	.0704	−5.71	0.8600	250 1	1.2983	326 10	n 0.6813	−4.80	−0.381	16 40.1	21 44.7
26	.0731	5.56	.8600	250 35	.2977	325 11	.6917	4.92	.370	42.3	40.7
27	.0758	5.41	.8601	251 8	.2970	324 12	.7017	5.03	.360	44.5	36.8
28	.0786	5.26	.8603	251 41	.2964	323 12	.7112	5.14	.350	46.7	32.8
29	.0813	5.12	.8605	252 13	.2958	322 12	.7205	5.25	.341	48.9	28.8
30	.0840	−4.97	0.8608	252 45	1.2951	321 12	n 0.7296	−5.36	−0.331	16 51.0	21 24.8
31	.0868	4.83	.8611	253 17	.2945	320 12	.7382	5.47	.321	53.2	20.8
Feb. 1	.0895	4.68	.8615	253 49	.2938	319 12	.7464	5.58	.312	55.3	16.8
2	.0923	4.54	.8619	254 20	.2931	318 12	.7544	5.68	.302	57.3	12.8
h 3	.0950	4.40	.8624	254 50	.2925	317 11	.7622	5.78	.293	16 59.3	8.8
(9.0) 4	.0977	−4.27	0.8629	255 21	1.2918	316 11	n 0.7696	−5.88	−0.284	17 1.4	21 4.7
5	.1005	4.13	.8634	255 51	.2912	315 10	.7768	5.98	.275	3.4	21 0.7
6	.1032	3.99	.8640	256 20	.2905	314 9	.7838	6.08	.266	5.3	20 56.6
7	.1059	3.86	.8647	256 49	.2898	313 8	.7905	6.17	.257	7.3	52.5
8	.1087	3.73	.8653	257 18	.2892	312 6	.7970	6.27	.248	9.2	48.4
9	.1114	−3.60	0.8660	257 47	1.2885	311 5	n 0.8032	−6.36	−0.239	17 11.1	20 44.3
10	.1142	3.47	.8667	258 15	.2879	310 3	.8092	6.44	.231	13.0	40.2
11	.1169	3.34	.8675	258 43	.2872	309 1	.8150	6.53	.222	14.9	36.1
12	.1196	3.21	.8682	259 10	.2866	307 59	.8207	6.62	.214	16.7	31.9
13	.1224	3.09	.8690	259 37	.2859	306 57	.8260	6.70	.206	18.5	27.8
14	.1251	−2.97	0.8698	260 3	1.2853	305 55	n 0.8312	−6.78	−0.197	17 20.2	20 23.6
15	.1278	2.84	.8706	260 29	.2847	304 52	.8362	6.86	.189	21.9	19.5
16	.1306	2.72	.8715	260 55	.2841	303 49	.8410	6.93	.181	23.7	15.3
17	.1333	2.60	.8723	261 21	.2835	302 47	.8456	7.01	.173	25.4	11.1
h 18	.1361	2.48	.8731	261 46	.2829	301 44	.8500	7.08	.165	27.1	6.9
(10.0) 19	.1388	−2.37	0.8740	262 10	1.2823	300 41	n 0.8543	−7.15	−0.157	17 28.7	20 2.7
20	.1415	2.25	.8748	262 35	.2817	299 37	.8584	7.22	.150	30.3	19 58.5
21	.1443	2.13	.8757	262 59	.2811	298 34	.8623	7.28	.142	31.9	54.3
22	.1470	2.02	.8765	263 22	.2806	297 31	.8660	7.34	.134	33.5	50.0
23	.1498	1.91	.8773	263 46	.2801	296 27	.8695	7.40	.127	35.1	45.8
24	.1525	−1.80	0.8782	264 8	1.2795	295 23	n 0.8729	−7.46	−0.120	17 36.5	19 41.5
25	.1552	1.69	.8790	264 31	.2790	294 19	.8760	7.52	.112	38.1	37.3
26	.1580	1.58	.8798	264 53	.2786	293 15	.8792	7.57	.105	39.5	33.0
27	.1607	1.47	.8806	265 15	.2781	292 11	.8821	7.62	.098	41.0	28.7
28	.1634	1.36	.8814	265 37	.2777	291 7	.8849	7.67	.090	42.5	24.5
29	0.1662	−1.26	0.8822	265 59	1.2772	290 3	n 0.8875	−7.72	−0.083	17 43.9	19 20.2

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
Mar. 1	0.1662	− 1.26	0.8822	265 59	1.2772	290 3	n 0.8875	−7.72	−0.083	17 43.9	19 20.2
2	.1689	1.15	.8830	266 20	.2768	288 59	.8900	7.76	.076	45.3	15.9
3	.1717	1.05	.8837	266 41	.2764	287 54	.8923	7.80	.069	46.7	11.6
4	.1744	0.94	.8845	267 1	.2760	286 49	.8945	7.84	.062	48.1	7.3
h 5	.1771	0.84	.8852	267 22	.2757	285 45	.8965	7.88	.056	49.5	19 2.9
(11.0) 6	.1799	− 0.74	0.8859	267 42	1.2753	284 40	n 0.8983	−7.91	−0.049	17 50.8	18 58.7
7	.1826	0.63	.8866	268 2	.2750	283 36	.9002	7.95	.042	52.2	54.4
8	.1853	0.53	.8872	268 22	.2747	282 31	.9018	7.98	.035	53.5	50.1
9	.1881	0.43	.8879	268 41	.2745	281 26	.9033	8.00	.028	54.8	45.7
10	.1908	0.33	.8885	269 1	.2742	280 21	.9045	8.03	.022	56.1	41.4
11	.1936	− 0.23	.8891	269 20	1.2740	279 16	n 0.9058	−8.05	−0.015	17 57.3	18 37.1
12	.1963	0.13	.8897	269 40	.2738	278 11	.9068	8.07	.008	58.7	32.7
13	.1990	− 0.03	.8902	269 59	.2736	277 6	.9077	8.09	−0.002	17 59.9	28.4
14	.2018	+ 0.07	.8907	270 18	.2735	276 1	.9085	8.10	+0.004	18 1.2	24.1
15	.2045	0.16	.8912	270 37	.2734	274 56	.9092	8.11	.011	2.5	19.7
16	.2072	+ 0.26	0.8917	270 55	1.2733	273 51	n 0.9098	−8.12	+0.017	18 3.7	18 15.4
17	.2100	0.36	.8922	271 14	.2732	272 46	.9101	8.13	.024	4.9	11.1
18	.2127	0.46	.8926	271 33	.2732	271 41	.9104	8.14	.030	6.2	6.7
19	.2155	0.55	.8930	271 51	.2731	270 36	.9106	8.14	.037	7.4	18 2.4
20	.2182	0.65	.8934	272 10	.2731	269 31	.9106	8.14	.043	8.7	17 58.1
h 21	.2209	+ 0.75	0.8937	272 28	1.2731	268 26	n 0.9105	−8.14	+0.050	18 9.9	17 53.7
(12.0) 22	.2237	0.85	.8940	272 47	.2732	267 21	.9102	8.13	.056	11.2	49.4
23	.2264	0.94	.8943	273 6	.2733	266 17	.9098	8.12	.063	12.4	45.1
24	.2292	1.04	.8946	273 24	.2734	265 12	.9093	8.11	.069	13.6	40.8
25	.2319	1.14	.8949	273 43	.2735	264 7	.9087	8.10	.076	14.9	36.5
26	.2346	+ 1.24	0.8951	274 2	1.2736	263 3	n 0.9079	−8.09	+0.082	18 16.1	17 32.2
27	.2374	1.34	.8953	274 20	.2738	261 59	.9070	8.07	.089	17.3	27.9
28	.2401	1.44	.8955	274 39	.2740	260 54	.9060	8.05	.095	18.6	23.6
29	.2428	1.54	.8957	274 58	.2742	259 50	.9048	8.03	.102	19.9	19.3
30	.2456	1.64	.8958	275 17	.2744	258 46	.9035	8.01	.109	21.2	15.1
31	.2483	+ 1.74	0.8959	275 36	1.2747	257 42	n 0.9020	−7.98	+0.115	18 22.4	17 10.8
Apr. 1	.2511	1.84	.8961	275 55	.2750	256 38	.9005	7.95	.122	23.7	6.5
2	.2538	1.94	.8961	276 14	.2753	255 34	.8988	7.92	.129	24.9	17 2.3
3	.2565	2.04	.8962	276 34	.2756	254 30	.8970	7.89	.136	26.2	16 58.0
h 4	.2593	2.15	.8963	276 54	.2759	253 27	.8950	7.85	.143	27.6	53.8
(13.0) 5	.2620	+ 2.25	0.8963	277 13	1.2763	252 23	n 0.8929	−7.81	+0.150	18 28.9	16 49.5
6	.2648	2.35	.8963	277 33	.2767	251 20	.8906	7.77	.156	30.2	45.3
7	.2675	2.46	.8964	277 53	.2771	250 17	.8883	7.73	.163	31.5	41.1
8	.2702	2.56	.8964	278 14	.2775	249 14	.8858	7.69	.171	32.9	36.9
9	.2730	2.67	.8964	278 34	.2779	248 11	.8831	7.64	.178	34.3	32.7
10	.2757	+ 2.78	0.8963	278 55	1.2784	247 8	n 0.8803	−7.59	+0.185	18 35.7	16 28.5
11	.2784	2.88	.8963	279 16	.2788	246 6	.8774	7.54	.192	37.1	24.4
12	.2812	2.99	.8963	279 37	.2793	245 4	.8743	7.49	.199	38.5	20.3
13	.2839	3.10	.8963	279 58	.2798	244 1	.8711	7.43	.207	39.9	16.1
14	.2867	3.22	.8962	280 20	.2803	242 59	.8676	7.37	.214	41.3	11.9
15	.2894	+ 3.33	0.8962	280 41	1.2809	241 58	n 0.8641	−7.31	+0.221	18 42.7	16 7.8
16	.2921	3.44	.8962	281 3	.2814	240 56	.8604	7.25	.229	44.2	16 3.7
17	.2949	3.55	.8962	281 25	.2819	239 55	.8566	7.19	.237	45.7	15 59.6
18	.2976	3.67	.8962	281 48	.2825	238 53	.8526	7.12	.244	47.2	55.5
19	.3003	3.79	.8961	282 10	.2831	237 52	.8484	7.05	.252	48.7	51.5
h 20	.3031	+ 3.90	0.8961	282 33	1.2837	236 51	n 0.8440	−6.98	+0.260	18 50.2	15 47.4
(14.0) 21	.3058	4.02	.8961	282 57	.2842	235 51	.8395	6.91	.268	51.8	43.4
22	.3086	4.14	.8961	283 20	.2849	234 50	.8349	6.84	.276	53.3	39.3
23	.3113	4.27	.8962	283 44	.2855	233 50	.8300	6.76	.284	54.9	35.3
24	3140	+ 4.39	0.8962	284 7	1.2861	232 50	n 0.8248	−6.68	+0.292	18 56.5	15 31.3
25	.3168	4.51	.8963	284 32	.2867	231 50	.8196	6.60	.300	58.1	27.3
26	.3195	4.64	.8963	284 56	.2873	230 51	.8143	6.52	.309	18 59.7	23.4
27	.3222	4.76	.8964	285 21	.2879	229 51	.8087	6.44	.317	19 1.4	19.4
28	.3250	+ 4.89	0.8966	285 46	1.2885	228 52	n 0.8029	−6.35	+0.326	19 3.1	15 15.5
29	.3277	5.02	.8967	286 11	.2892	227 53	.7969	6.26	.334	4.7	11.5
30	.3305	5.15	.8969	286 36	.2898	226 54	.7907	6.18	.343	6.4	7.6
31	0.3332	+ 5.28	0.8971	287 1	1.2904	225 56	n 0.7843	−6.09	+0.352	19 8.1	15 3.7

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.		τ.	*f*.	Log *g*.	G.		Log *h*.	H.		Log *i*.	*i*.	*f*.	G.		H.	
		y	″		°	′		°	′		″	s	h	m	h	m
May	1	0.3332	+ 5.28	0.8971	287	1	1.2904	225	46	*n* 0.7843	−6.09	+0.352	19	8.1	15	3.7
	2	.3359	5.41	.8973	287	27	.2911	224	57	.7776	5.99	.360		9.8	14	59.8
	3	.3387	5.55	.8975	287	53	.2917	223	59	.7709	5.90	.369		11.5		55.9
	4	.3414	5.68	.8978	288	19	.2923	223	1	.7637	5.80	.378		13.3		52.1
	5	.3442	5.82	.8982	288	46	.2930	222	3	.7563	5.71	.388		15.1		48.2
(15^h.0)	6	.3469	+ 5.96	0.8985	289	12	1.2936	221	6	*n* 0.7487	−5.61	+0.397	19	16.8	14	44.4
	7	.3496	6.10	.8989	289	39	.2942	220	8	.7410	5.51	.406		18.6		40.5
	8	.3524	6.24	.8994	290	6	.2948	219	11	.7330	5.41	.415		20.4		36.7
	9	.3551	6.38	.8998	290	33	.2955	218	14	.7245	5.30	.425		22.2		32.9
	10	.3579	6.52	.9004	291	1	.2961	217	17	.7158	5.20	.434		24.1		29.1
	11	.3606	+ 6.67	0.9009	291	28	1.2967	216	20	*n* 0.7068	−5.09	+0.444	19	25.9	14	25.3
	12	.3633	6.81	.9015	291	55	.2973	215	23	.6976	4.98	.454		27.7		21.6
	13	.3661	6.96	.9022	292	23	.2979	214	27	.6880	4.87	.463		29.5		17.8
	14	.3688	7.11	.9029	292	51	.2984	213	31	.6781	4·76	.473		31.4		14.1
	15	.3715	7.26	.9036	293	19	.2990	212	35	.6677	4.65	.483		33.3		10.3
	16	.3743	+ 7.41	0.9044	293	46	1.2996	211	39	*n* 0.6571	−4.54	+0.493	19	35.1	14	6.6
	17	.3770	7.56	.9053	294	14	.3002	210	44	.6461	4.43	.503		36.9	14	2.9
	18	.3798	7.71	.9062	294	42	.3007	209	48	.6347	4.31	.514		38.8	13	59.2
	19	.3825	7.87	.9071	295	10	.3013	208	53	.6227	4.19	.524		40.7		55.5
	20	.3852	8.02	.9081	295	38	.3018	207	58	.6103	4.08	.534		42.5		51.8
(16^h.0)	21	.3880	+ 8.18	0.9092	296	6	1.3023	207	2	*n* 0·5975	−3.96	+0.545	19	44.4	13	48.2
	22	.3907	8.33	.9103	296	34	.3028	206	8	.5842	3.84	.555		46.3		44.5
	23	.3934	8.49	.9114	297	2	.3033	205	13	.5703	3.72	.566		48.2		40.9
	24	.3962	8.65	.9126	297	30	.3038	204	18	.5557	3.59	.576		50.0		37.2
	25	.3989	8.81	.9139	297	58	.3042	203	24	.5406	3.47	.587		51.9		33.6
	26	.4017	+ 8.97	0.9152	298	26	1.3047	202	30	*n* 0.5249	−3.35	+0.598	19	53.7	13	29.9
	27	.4044	9.14	.9166	298	53	.3051	201	35	.5084	3.22	.609		55.5		26.4
	28	.4071	9.30	.9180	299	21	.3055	200	41	.4911	3.10	.620		57.4		22.7
	29	.4099	9.46	.9195	299	48	.3059	199	47	.4731	2.97	.631	19	59.2		19.1
	30	.4126	9.63	.9211	300	16	.3063	198	54	.4542	2.84	.642	20	1.1		15.6
	31	.4153	+ 9.80	0.9226	300	43	1.3067	198	0	*n* 0.4343	−2.72	+0.653	20	2.9	13	12.0
June	1	.4181	9.96	.9243	301	10	.3071	197	6	.4131	2.59	.664		4.7		8.4
	2	.4208	10.13	.9259	301	36	.3074	196	13	.3909	2.46	.675		6.4		4.8
	3	.4236	10.30	.9277	302	3	.3078	195	19	.3674	2.33	.686		8.2	13	1.3
	4	.4263	10.47	.9295	302	29	.3081	194	26	.3424	2.20	.697		9.9	12	57.7
(17^h.0)	5	.4290	+10.64	0.9313	302	55	1.3084	193	33	*n* 0.3156	−2.07	+0.709	20	11.7	12	54.2
	6	.4318	10.81	.9331	303	21	.3086	192	40	.2869	1.94	.720		13.4		50.7
	7	.4345	10.98	.9351	303	47	.3089	191	47	.2562	1.80	.731		15.2		47.1
	8	.4373	11.15	.9371	304	12	.3091	190	54	.2230	1.67	.743		16.8		43.6
	9	.4400	11.32	.9391	304	37	.3093	190	1	.1870	1.54	.754		18.5		40.1
	10	.4427	+11.49	0.9411	305	2	1.3095	189	8	*n* 0.1474	−1.40	+0.766	20	20.1	12	36.5
	11	.4455	11.67	.9432	305	26	.3097	188	15	.1042	1.27	.777		21.7		33.0
	12	.4482	11.84	.9453	305	50	.3099	187	22	.0558	1.14	.789		23.3		29.5
	13	.4509	12.01	.9475	306	14	.3101	186	30	0.0009	1.00	.800		24.9		26.0
	14	.4537	12.19	.9497	306	38	.3102	185	37	9.9385	0.87	.812		26.5		22.5
	15	.4564	+12.36	0.9520	307	1	1.3103	184	44	*n* 9.8651	−0.73	+0.824	20	28.1	12	18.9
	16	.4592	12.53	.9542	307	24	.3104	183	52	9.7767	0.60	.835		29.5		15.4
	17	.4619	12.71	.9565	307	46	.3105	182	59	9.6656	0.46	.847		31.1		11.9
	18	.4646	12.88	.9589	308	8	.3105	182	6	9.5146	0.33	.859		32.5		8.4
	19	.4674	13.06	.9612	308	30	.3106	181	14	9.2833	0.19	.870		34.0		4.9
	20	.4701	+13.23	0.9636	308	51	1.3106	180	21	*n* 8.7482	−0.06	+0.882	20	35.4	12	1.4
(18^h.0)	21	.4728	13.41	.9661	309	12	.3106	179	29	*p* 8.8976	+0.08	.893		36.8	11	57.9
	22	.4756	13.58	.9685	309	32	.3106	178	36	9.3324	0.21	.905		38.1		54.4
	23	.4783	13.76	.9710	309	53	.3105	177	44	9.5441	0.35	.917		39.5		50.9
	24	.4811	+13.93	0.9735	310	12	1.3105	176	51	9.6857	+0.48	+0.928	20	40.8	11	47.4
	25	.4838	14.11	.9760	310	32	.3104	175	59	9.7931	0.62	.940		42.1		43.9
	26	.4865	14.28	.9785	310	51	.3103	175	7	9.8785	0.76	.952		43.4		40.4
	27	.4893	14.45	.9810	311	10	.3102	174	14	9.9494	0.89	.963		44.7		36.9
	28	.4920	+14.63	0.9836	311	28	1.3100	173	21	0.0107	+1.02	+0.975	20	45.9	11	33.4
	29	.4947	14.80	.9861	311	46	.3099	172	29	0.0641	1.16	.986		47.1		29.9
	30	.4975	14.97	.9887	312	3	.3097	171	36	0.1116	1.29	+0.998		48.2		26.4
	31	0.5002	+15.15	0.9913	312	20	1.3096	170	43	0.1544	+1.43	+1.009	20	49.3	11	22.9

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
July 1	0.5002	+15.15	0.9913	312 20	1.3095	170 43	0.1544	+1.43	+1.009	20 49.3	11 22.9
2	.5030	15.32	.9939	312 37	.3093	169 51	.1931	1.56	.021	50.5	19.4
3	.5057	15.49	.9965	312 53	.3091	168 58	.2286	1.69	.032	51.5	15.9
4	.5084	15.66	0.9991	313 9	.3088	168 5	.2613	1.82	.044	52.6	12.3
5	.5112	15.83	1.0017	313 25	.3086	167 12	.2916	1.96	.055	53.7	8.8
(19ʰ.0) 6	.5139	+16.00	1.0043	313 40	1.3083	166 19	0.3197	+2.09	+1.067	20 54.7	11 5.3
7	.5167	16.17	.0069	313 55	.3080	165 26	.3469	2.22	.078	55.7	11 1.7
8	.5194	16.34	.0095	314 9	.3077	164 33	.3707	2.35	.089	56.6	10 58.2
9	.5221	16.51	.0121	314 24	.3074	163 40	.3941	2.48	.100	57.6	54.6
10	.5249	16.68	.0147	314 37	.3070	162 46	.4160	2.61	.111	58.5	51.1
11	.5276	+16.84	1.0173	314 51	1.3067	161 53	0.4370	+2.73	+1.123	20 59.4	10 47.5
12	.5303	17.01	.0199	315 4	.3063	160 59	.4567	2.86	.134	21 0.3	43.9
13	.5331	17.18	.0225	315 17	.3059	160 6	.4754	2.99	.145	1.1	40.4
14	.5358	17.34	.0251	315 29	.3055	159 12	.4933	3.11	.156	1.9	36.8
15	.5386	17.50	.0277	315 41	.3051	158 18	.5104	3.24	.166	2.7	33.2
16	.5413	+17.66	1.0302	315 53	1.3046	157 24	0.5267	+3.36	+1.177	21 3.5	10 29.5
17	.5440	17.83	.0328	316 4	.3042	156 30	.5423	3.49	.188	4.3	26.0
18	.5468	17.99	.0353	316 15	.3037	155 36	.5572	3.61	.199	5.0	22.4
19	.5495	18.15	.0378	316 26	.3033	154 42	.5715	3.73	.209	5.7	18.8
20	.5522	18.30	.0403	316 36	.3028	153 47	.5854	3.85	.220	6.4	15.1
(20ʰ.0) 21	.5550	+18.46	1.0428	316 47	1.3023	152 53	0.5986	+3.97	+1.230	21 7.1	10 11.5
22	.5577	18.62	.0453	316 57	.3017	151 58	.6113	4.09	.241	7.8	7.9
23	.5605	18.77	.0478	317 6	.3012	151 3	.6235	4.20	.251	8.4	4.2
24	.5632	18.93	.0503	317 16	.3007	150 8	.6352	4.32	.261	9.1	10 0.5
25	.5659	19.08	.0527	317 25	.3001	149 13	.6465	4.43	.272	9.7	9 56.9
26	.5687	+19.23	1.0551	317 33	1.2996	148 18	0.6575	+4.54	+1.282	21 10.2	9 53.2
27	.5714	19.38	.0575	317 42	.2990	147 23	.6682	4.66	.292	10.8	49.5
28	.5741	19.53	.0599	317 50	.2984	146 27	.6784	4.77	.302	11.3	45.8
29	.5769	19.68	.0622	317 58	.2979	145 31	.6882	4.88	.312	11.9	42.1
30	.5796	19.83	.0645	318 6	.2973	144 35	.6978	4.99	.321	12.4	38.4
31	.5824	+19.97	1.0669	318 14	1.2967	143 39	0.7070	+5.09	+1.331	21 12.9	9 34.6
Aug. 1	.5851	20.12	.0691	318 21	.2961	142 43	.7158	5.20	.341	13.4	30.9
2	.5878	20.26	.0714	318 29	.2955	141 47	.7244	5.30	.350	13.9	27.1
3	.5906	20.40	.0737	318 36	.2949	140 50	.7327	5.40	.360	14.4	23.3
4	.5933	20.54	.0759	318 43	.2942	139 53	.7408	5.50	.369	14.8	19.5
(21ʰ.0) 5	.5961	+20.68	1.0781	318 49	1.2936	138 56	0.7486	+5.60	+1.379	21 15.3	9 15.7
6	.5988	20.82	.0802	318 56	.2930	137 59	.7560	5.70	.388	15.7	11.9
7	.6015	20.96	.0824	319 2	.2924	137 2	.7633	5.80	.397	16.1	8.1
8	.6043	21.09	.0845	319 8	.2918	136 4	.7703	5.89	.406	16.5	4.3
9	.6070	21.23	.0866	319 14	.2911	135 7	.7771	5.99	.415	16.9	9 0.5
10	.6097	+21.36	1.0887	319 20	1.2905	134 9	0.7838	+6.08	+1.424	21 17.3	8 56.6
11	.6125	21.49	.0907	319 26	.2899	133 11	.7902	6.17	.432	17.7	52.7
12	.6152	21.62	.0928	319 31	.2892	132 12	.7964	6.26	.441	18.1	48.8
13	.6180	21.75	.0948	319 37	.2886	131 14	.8023	6.34	.450	18.5	44.9
14	.6207	21.88	.0968	319 42	.2880	130 15	.8080	6.43	.458	18.8	41.0
15	.6234	+22.01	1.0987	319 47	1.2874	129 16	0.8136	+6.51	+1.467	21 19.1	8 37.1
16	.6262	22.13	.1006	319 52	.2868	128 17	.8190	6.59	.475	19.5	33.2
17	.6289	22.26	.1025	319 57	.2861	127 18	.8242	6.67	.483	19.8	29.2
18	.6316	22.38	.1044	320 2	.2855	126 19	.8292	6.75	.492	20.2	25.3
19	.6344	22.50	.1062	320 7	.2849	125 19	.8340	6.82	.500	20.5	21.3
20	.6371	+22.62	1.1080	320 12	1.2843	124 20	0.8387	+6.90	+1.508	21 20.8	8 17.3
(22ʰ.0) 21	.6399	22.74	.1098	320 17	.2838	123 20	.8432	6.97	.516	21.1	13.3
22	.6426	22.86	.1116	320 21	.2832	122 19	.8475	7.04	.524	21.4	9.3
23	.6453	22.98	.1133	320 26	.2826	121 19	.8517	7.11	.531	21.7	5.3
24	.6481	23.09	.1150	320 30	.2821	120 19	.8557	7.17	.539	22.0	8 1.3
25	.6508	+23.21	1.1168	320 35	1.2815	119 18	0.8596	+7.24	+1.547	21 22.3	7 57.2
26	.6535	23.32	.1184	320 39	.2810	118 17	.8632	7.30	.554	22.6	53.1
27	.6564	23.44	.1201	320 44	.2805	117 16	.8668	7.36	.562	22.9	49.1
28	.6590	23.55	.1217	320 48	.2799	116 15	.8701	7.41	.569	23.2	44.9
29	.6618	23.66	.1233	320 52	.2794	115 13	.8734	7.47	.577	23.5	40.9
30	.6645	+23.77	1.1248	320 57	1.2790	114 12	0.8765	+7.52	+1.584	21 23.8	7 36.8
31	0.6672	+23.88	1.1264	321 1	1.2785	113 10	0.8795	+7.58	+1.592	21 24.1	7 32.7

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G	H.
	y	"		° '		° '		"	s	h m	h m
Sept. 1	0.6700	+23.99	1.1279	321 5	1.2781	112 8	0.8822	+7.62	+1.599	21 24.4	7 28.6
2	.6727	24.10	.1294	321 10	.2776	111 6	.8849	7.67	.606	24.7	24.4
3	.6754	24.20	.1309	321 14	.2772	110 4	.8875	7.72	.613	24.9	20.3
h 4	.6782	24.31	.1323	321 19	.2768	109 2	.8899	7.76	.620	25.2	16.1
(23.0) 5	.6809	24.41	.1338	321 23	.2764	107 59	.8921	7.80	.627	25.5	11.9
6	.6837	+24.52	1.1352	321 27	1.2761	106 57	0.8942	+7.84	+1.634	21 25.8	7 7.8
7	.6864	24.62	.1366	321 32	.2757	105 54	.8962	7.87	.641	26.1	7 3.6
8	.6891	24.72	.1379	321 36	.2754	104 51	.8981	7.91	.648	26.4	6 59.4
9	.6919	24.83	.1393	321 41	.2751	103 48	.8998	7.94	.655	26.7	55.2
10	.6946	24.93	.1406	321 46	.2748	102 45	.9014	7.97	.662	27.0	51.0
11	.6974	+25.03	1.1419	321 50	1.2745	101 42	0.9029	+8.00	+1.668	21 27.3	6 46.8
12	.7001	25.13	.1432	321 55	.2743	100 38	.9042	8.02	.675	27.7	42.5
13	.7028	25.23	.1444	321 60	.2741	99 35	.9054	8.04	.682	28.0	38.3
14	.7056	25.33	.1457	322 5	.2739	98 31	.9066	8.06	.688	28.3	34.1
15	.7083	25.43	.1469	322 9	.2737	97 28	.9075	8.08	.695	28.6	29.8
16	.7110	+25.53	1.1481	322 14	1.2735	96 24	0.9083	+8.10	+1.702	21 28.9	6 25.6
17	.7138	25.63	.1493	322 20	.2734	95 20	.9090	8.11	.708	29.3	21.4
18	.7165	25.73	.1505	322 25	.2733	94 16	.9096	8.12	.715	29.6	17.1
h 19	.7193	25.83	.1517	322 30	.2732	93 12	.9100	8.13	.722	30.0	12.8
(0.0) 20	.7220	25.93	.1528	322 35	.2732	92 8	.9104	8.13	.728	30.3	8.6
21	.7247	+26.03	1.1539	322 41	1.2731	91 4	0.9106	+8.14	+1.735	21 30.7	6 4.3
22	.7275	26.13	.1550	322 46	.2731	90 0	.9106	8.14	.741	31.1	6 0.0
23	.7302	26.22	.1561	322 52	.2731	88 56	.9105	8.14	.748	31.4	5 55.7
24	.7329	26.32	.1572	322 57	.2732	87 52	.9103	8.13	.754	31.8	51.5
25	.7357	26.42	.1583	323 3	.2732	86 48	.9100	8.13	.761	32.2	47.2
26	.7384	+26.52	1.1594	323 9	1.2733	85 44	0.9096	+8.12	+1 768	21 32.6	5 42.9
27	.7412	26.62	.1604	323 15	.2734	84 40	.9090	8.11	.774	33.0	38.6
28	.7439	26.72	.1615	323 21	.2735	83 35	.9082	8.09	.781	33.4	34.3
29	.7466	26.82	.1625	323 28	.2737	82 31	.9074	8.08	.788	33.8	30.1
30	.7494	26.92	.1635	323 34	.2739	81 27	.9065	8.06	.794	34.3	25.8
Oct. 1	.7521	+27.02	1.1645	323 40	1.2741	80 23	0.9054	+8.04	+1.801	21 34.7	5 21.5
2	.7548	27.12	.1656	323 47	.2743	79 19	.9042	8.02	808	35.1	17.3
3	.7576	27.22	.1666	323 54	.2746	78 15	.9029	8.00	.814	35.6	13.0
h 4	.7603	27.33	.1676	324 1	.2748	77 11	.9013	7.97	.821	36.0	8.7
(1.0) 5	.7631	27.43	.1686	324 7	.2751	76 7	.8997	7.94	.828	36.5	4.4
6	.7658	+27.53	1.1696	324 14	1.2754	75 3	0.8979	+7.90	+1.835	21 36.9	5 0.2
7	.7685	27.63	.1705	324 22	.2758	73 59	.8960	7.87	.842	37.4	4 55.9
8	.7713	27.74	.1715	324 29	.2761	72 55	.8939	7.82	.849	37.9	51.6
9	.7740	27.84	.1725	324 36	.2765	71 51	.8918	7.79	.856	38.4	47.4
10	.7767	27.95	.1735	324 44	.2769	70 47	.8894	7.75	.863	38.9	43.2
11	.7795	+28.06	1.1745	324 51	1.2773	69 44	0.8869	+7.71	+1.870	21 39.4	4 38.9
12	.7822	28.17	.1754	324 59	.2777	68 40	.8843	7.66	.877	39.9	34.7
13	.7850	28.27	.1764	325 7	.2782	67 37	.8816	7.61	.885	40.5	30.5
14	.7877	28.38	.1774	325 15	.2786	66 33	.8787	7.56	.892	41.0	26.2
15	.7904	28.50	.1784	325 23	.2791	65 30	.8756	7.51	.899	41.5	22.0
16	.7932	+28.61	1.1794	325 31	1.2796	64 27	0.8725	+7.45	+1.907	21 42.1	4 17.8
17	.7959	28.72	.1804	325 40	.2801	63 24	.8690	7.40	.914	42.7	13.6
18	.7986	28.83	.1813	325 48	.2806	62 21	.8655	7.34	.922	43.2	9.4
h 19	.8014	28.95	.1823	325 57	.2812	61 19	.8618	7.27	.930	43.8	5.2
(2.0) 20	.8041	29.07	.1834	326 5	.2818	60 16	.8580	7.21	.937	44.3	4 1.1
21	.8069	+29.18	1.1844	326 14	1.2823	59 13	0.8539	+7.14	+1.945	21 44.9	3 56.9
22	.8096	29.30	.1854	326 23	.2829	58 11	.8497	7.07	.953	45.5	52.7
23	.8123	29.42	.1864	326 32	.2835	57 9	.8453	7.00	.961	46.1	48.6
24	.8151	29.54	.1875	326 41	.2841	56 7	.8407	6.93	.969	46.7	44.4
25	.8178	+ 29.67	1.1885	326 50	1.2847	55 5	0.8359	+6.85	+1.977	21 47.3	3 40.3
26	.8205	29.79	.1896	326 59	.2853	54 3	.8309	6.77	.986	47.9	36.2
27	.8233	29.92	.1906	327 8	.2859	53 1	.8258	6.70	1.994	48.5	32.1
28	.8260	30.04	.1917	327 18	.2866	51 59	.8205	6.61	2.002	49.2	28.0
29	.8288	+30.17	1.1928	327 27	1.2872	50 58	0.8150	+6.53	+2.011	21 49.8	3 23.9
30	.8315	30.30	.1939	327 36	.2879	49 57	.8092	6.44	.020	50.4	19.8
31	.8342	30.43	.1950	327 46	.2885	48 56	.8033	6.36	.028	51.1	15.7
32	0.8370	+30.56	1.1961	327 55	1.2891	47 55	0.7971	+6.27	+2.037	21 51.7	3 11.6

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1874.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
Nov. 1	0.8370	+30.56	1.1961	327 55	1.2891	47 55	0.7971	+6.27	+2.037	21 51.7	3 11.6
2	.8397	30.70	.1972	328 5	.2898	46 54	.7907	6.18	.046	52.3	7.6
3	.8425	30.83	.1984	328 15	.2905	45 53	.7841	6.08	.055	53.0	3 3.5
h 4	.8452	30.97	.1995	328 24	.2911	44 53	.7771	5.99	.064	53.6	2 59.5
(3.0) 5	.8479	31.10	.2007	328 34	.2918	43 53	.7700	5.89	.073	54.3	55.5
6	0.8507	+31.24	1.2019	328 44	1.2924	42 52	0.7626	+5.79	+2.083	21 54.9	2 51.5
7	.8534	31.39	.2031	328 54	.2931	41 52	.7550	5.69	.092	55.6	47.5
8	.8561	31.53	.2043	329 3	.2937	40 52	.7470	5.58	.101	56.2	43.5
9	.8589	31.67	.2056	329 13	.2944	39 53	.7388	5.48	.111	56.9	39.5
10	.8616	31.82	.2068	329 23	.2950	38 53	.7303	5 37	.121	57.5	35.5
11	.8643	+31.96	1.2081	329 33	1.2957	37 54	0.7215	+5.27	+2.131	21 58.2	2 31.6
12	.8671	32.11	.2094	329 43	.2963	36 54	.7123	5.16	.140	58.8	27.6
13	.8698	32.26	.2107	329 52	.2970	35 55	.7028	5.04	.150	21 59.5	23.7
14	.8726	32.41	.2120	330 2	.2976	34 56	.6929	4.93	.160	22 0.1	19.7
15	.8753	32.56	.2133	330 12	.2982	33 57	.6826	4.81	.171	0.8	15.8
16	.8780	+32.72	1.2146	330 22	1.2988	32 58	0.6720	+4.70	+2.181	22 1.4	2 11.9
17	.8808	32.87	.2160	330 31	.2994	32 0	.6611	4.58	.191	2.1	8.0
18	.8835	33.03	.2174	330 41	.3000	31 1	.6496	4.46	.202	2.7	4.1
h 19	.8862	33.19	.2188	330 50	.3006	30 3	.6377	4.34	.212	3.4	2 0.2
(4.0) 20	.8890	33.35	.2202	331 0	.3011	29 5	.6253	4.22	.223	4.0	1 56.3
21	.8917	+33.51	1.2216	331 9	1.3017	28 7	0.6124	+4.10	+2.233	22 4.6	1 52.5
22	.8945	33.67	.2231	331 19	.3022	27 9	.5989	3.97	.244	5.3	48.6
23	.8972	33.83	.2245	331 28	.3028	26 11	.5849	3.85	.255	5.9	44.7
24	.8999	34.00	.2260	331 37	.3033	25 14	.5703	3.72	.266	6.5	40.9
25	.9027	34.16	.2275	331 47	.3038	24 16	.5551	3.59	.277	7.1	37.1
26	.9054	+34.33	1.2289	331 56	1.3043	23 19	0.5392	+3.46	+2.288	22 7.7	1 33.2
27	.9082	34.50	.2305	332 5	.3047	22 21	.5224	3.33	.299	8.3	29.4
28	.9109	34.67	.2320	332 14	.3052	21 24	.5049	3.20	.311	8.9	25.6
29	.9136	34.84	.2336	332 22	.3057	20 27	.4864	3.06	.322	9.5	21.8
30	.9164	35.01	.2351	332 31	.3061	19 30	.4670	2.93	.334	10.1	18.0
Dec. 1	.9191	+35.18	1.2367	332 40	1.3065	18 33	0.4465	+2.80	+2.345	22 10.7	1 14.2
2	.9218	35.35	.2382	332 48	.3069	17 36	.4249	2.66	.357	11.2	10.4
3	.9246	35.53	.2398	332 56	.3073	16 39	.4021	2.52	.368	11.8	6.6
h 4	.9273	35.70	.2414	333 5	.3076	15 43	.3779	2.39	.380	12.3	1 2.8
(5.0) 5	.9301	35.88	.2431	333 13	.3079	14 46	.3518	2.25	.392	12.9	0 59.1
6	.9328	+36.06	1.2447	333 21	1.3083	13 49	0.3241	+2.11	+2.403	22 13.4	0 55.3
7	.9355	36.23	.2463	333 28	.3086	12 53	.2943	1.97	.415	13.9	51.5
8	.9383	36.41	.2480	333 36	.3088	11 56	.2620	1.83	.427	14.4	47.8
9	.9410	36.59	.2496	333 44	.3091	11 0	.2271	1.69	.439	14.9	44.0
10	.9437	36.77	2513	333 51	.3093	10 4	.1892	1.55	.451	15.4	40.2
11	.9465	+36.95	1.2530	333 58	1.3096	9 7	0.1474	+1.40	+2.463	22 15.9	0 36.5
12	.9492	37.13	.2547	334 6	.3098	8 11	.1007	1.26	.475	16.4	32.7
13	.9520	37.32	.2563	334 13	.3099	7 15	0.0484	1.12	.487	16.9	29.0
14	.9547	37.50	.2580	334 19	.3101	6 19	9.9886	0.97	.499	17.3	25.2
15	.9574	37.68	.2597	334 26	.3102	5 22	.9196	0.83	.512	17.7	21.5
16	.9602	+37.86	1.2614	334 32	1.3103	4 26	9.8370	+0.69	+2.524	22 18.1	0 17.7
17	.9629	38.04	.2631	334 39	.3104	3 30	.7348	0.54	.536	18.6	14.0
18	.9656	38.23	.2648	334 45	.3105	2 34	.5999	0.40	.548	19.0	10.3
h 19	.9684	38.41	.2665	334 51	.3106	1 38	.4048	0.25	.560	19.4	6.5
(6.0) 20	.9711	38.59	.2683	334 57	.3106	0 42	p 9.0374	+0.11	.572	19.8	0 2.8
21	.9739	+38.77	1.2700	335 3	1.3106	359 46	n 8.5563	−0.04	+2.585	22 20.2	23 59.1
22	.9766	38.96	.2717	335 8	.3106	358 50	9.2553	0.18	.597	20.5	55.3
23	.9793	39.14	.2734	335 14	.3105	357 54	.5119	0.32	.609	20.9	51.6
24	.9821	39.32	.2751	335 19	.3105	356 58	.6721	0.47	.621	21.3	47.9
25	.9848	+39.51	1.2769	335 24	1.3104	356 2	9.7882	−0.61	+2.633	22 21.6	23 44.1
26	.9876	39.69	.2786	335 29	.3103	355 6	.8797	0.76	.646	21.9	40.4
27	.9903	39.87	.2803	335 34	.3102	354 9	9.9552	0.90	.658	22.2	36.6
28	.9930	40.05	.2820	335 38	.3100	353 13	0.0191	1.04	.670	22.5	32.9
29	.9958	+40.24	1.2837	335 42	1.3099	352 17	0.0752	−1.19	+2.682	22 22.8	23 29.1
30	0.9985	40.42	.2854	335 47	.3097	351 21	.1245	1.33	.694	23.1	25.4
31	1.0012	40.60	.2871	335 51	.3095	350 24	.1688	1.47	.706	23.4	21·6
32	1.0040	+40.78	1.2888	335 55	1.3092	349 28	n 0.2087	−1.62	+2.718	22 23.7	23 17.9

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$\mathrm{A} = \tau - 0.34244 \sin \Omega + 0.00410 \sin 2\Omega - 0.02519 \sin 2\odot + 0.00294 \sin (\odot + 82^\circ\ 16')$.
$\mathrm{B} = -9''.2238 \cos \Omega + 0''.0896 \cos 2\Omega - 0''.5507 \cos 2\odot - 0''.0092 \cos (\odot + 280^\circ\ 46')$
$\mathrm{C} = -20''.4451 \cos \omega \cos \odot$.
$\mathrm{D} = -20''.4451 \sin \odot$.
$\mathrm{E} = -0''.0469 \sin \Omega + 0''.0014 \sin 2\Omega - 0''.0034 \sin 2\odot$.

$a = 3^{\mathrm{s}}.07223 + 1^{\mathrm{s}}.33695 \sin \alpha \tan \delta$.
$b = \frac{1}{15} \cos \alpha \tan \delta$.
$c = \frac{1}{15} \cos \alpha \sec \delta$.
$d = \frac{1}{15} \sin \alpha \sec \delta$.

$a' = 20''.0543 \cos \alpha$.
$b' = -\sin \alpha$.
$c' = \tan \omega \cos \delta - \sin \alpha \sin \delta$.
$d' = \cos \alpha \sin \delta$.

μ = the annual proper motion in right ascension.
μ' = the annual proper motion in declination.

τ = the time reckoned from Jan. 0 — $\overset{\mathrm{d}}{.}195$, (when the sun's mean longitude is 280°,) and expressed in fractional parts of a tropical year.
$\odot$ = the sun's true longitude.
Ω = the longitude of the moon's ascending node.
ω = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.
δ = the star's mean declination for the beginning of the year.

α' = the star's apparent right ascension at the time τ.
δ' = the star's apparent declination at the time τ.

$\alpha' - \alpha = \mathrm{A}a + \mathrm{B}b + \mathrm{C}c + \mathrm{D}d + \mathrm{E} + \tau\mu$. (in time)
$\delta' - \delta = \mathrm{A}a' + \mathrm{B}b' + \mathrm{C}c' + \mathrm{D}d' + \tau\mu'$. (in arc)

The following formulæ may also be used by putting

$f = 46''.0834\,\mathrm{A} + \mathrm{E} = 3^{\mathrm{s}}.07223\,\mathrm{A} + \frac{1}{15}\mathrm{E}$. $i = \mathrm{C} \tan \omega$.
$g \cos \mathrm{G} = 20''.0543\,\mathrm{A}$. $h \sin \mathrm{H} = \mathrm{C}$.
$g \sin \mathrm{G} = \mathrm{B}$ $h \cos \mathrm{H} = \mathrm{D}$.

$\alpha' - \alpha = f + \tau\mu + g \sin (\mathrm{G} + \alpha) \frac{\tan \delta}{15} + h \sin (\mathrm{H} + \alpha) \frac{\sec \delta}{15}$. (in time)
$\delta' - \delta = \tau\mu' + g \cos (\mathrm{G} + \alpha) + h \cos (\mathrm{H} + \alpha) \sin \delta + i \cos \delta$. (in arc)

Tables IV. and V. of the Appendix contain the following terms, which may be added to A and B, when great accuracy is required:

$\Delta\mathrm{A} = -0.00405 \sin 2 ☾ + 0.00135 \sin (☾ - \Gamma') + 0.00025 \sin (2\odot - \Omega)$
$+ 0.00010 \sin 2 (\odot - \Gamma') - 0.00005 \sin 2 (\odot - \Omega) + 0.00009 \sin (2\Gamma' - \Omega)$
$+ 0.00005 \cos \Gamma' + 0.00004 \sin 2\Gamma' - 0.00011 \sin (3\odot - \Gamma)$.

$\Delta\mathrm{B} = -0''.0885 \cos 2 ☾ + 0''.0067 \cos (2\odot - \Omega) + 0''.0024 \cos (2\Gamma' - \Omega)$
$- 0''.0023 \sin \Gamma' + 0''.0008 \cos 2\Gamma' - 0''.0027 \cos (3\odot - \Gamma)$.

In which—

☾ = the moon's mean longitude.
Γ = the longitude of the sun's perigee.
Γ' = the longitude of the moon's perigee.

Other terms, which become sensible for stars very near the pole, will be found on page 497.

MEAN PLACES FOR 1874.0. (Jan. $0^{\mathrm{d}}.195$, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α Andromedæ . . .	2	0 1 52.645	+ 3.088	+28 23 41.78	+19.90
γ Pegasi (*Algenib*) .	3.2	0 6 44.949	3.083	+14 28 59.51	20.04
* β Hydri	3	0 19 5.638	3.253	−77 57 53.45	20.25
α Cassiopeæ	var.	0 33 22.140	3.366	+55 50 45.25	19.80
β Ceti	2	0 37 15.794	3.013	−18 40 42.39	19.83
*21 Cassiopeæ	6	0 37 21.693	+ 3.833	+74 17 54.04	+19.72
ε Piscium	4	0 56 24.314	3.109	+ 7 12 40.99	19.47
* α Ursæ Min. (*Polaris*)	2	1 12 39.372	20.718	+88 38 14.76	19.05
θ¹ Ceti	3	1 17 43.535	2.998	− 8 50 1.68	18.72
*38 Cassiopeæ	6	1 21 53.056	4.356	+69 36 54.18	18.71
η Piscium	4.3	1 24 44.523	+ 3.199	+14 41 45.08	+18.72
α Eridani (*Achernar*)	1	1 33 0.963	2.234	−57 52 37.83	18.41
ο Piscium	4	1 38 44.558	3.162	+ 8 31 22.12	18.26
β Arietis	3.2	1 47 40.937	3.301	+20 11 29.23	17.79
*50 Cassiopeæ	4	1 52 42.888	4.982	+71 48 35.10	17.68
α Arietis	2	2 0 4.424	+ 3.369	+22 51 56.76	+17.23
ξ¹ Ceti	4.5	2 6 19.341	3.170	+ 8 15 16.67	17.07
* ι Cassiopeæ	4	2 18 42.512	4.841	+66 50 1.72	16.47
γ Ceti	3.4	2 36 46.395	3.103	+ 2 42 13.33	15.39
α Ceti	2.3	2 55 41.653	3.129	+ 3 35 38.58	14.35
*48 Cephei (H.) . . .	6	3 4 24.610	+ 7.352	+77 16 4.37	+13.84
ζ Arietis	4.5	3 7 39.706	3.437	+20 34 34.53	13.64
α Persei	2	3 15 20.118	4.249	+49 24 37.79	13.15
δ Persei	3	3 33 57.530	4.240	+47 22 56.13	11.88
η Tauri	3	3 39 59.809	3.554	+23 42 49.48	11.45
ζ Persei	3	3 46 12.897	+ 3.757	+31 30 26.82	+11.03
γ¹ Eridani	3	3 52 9.067	2.796	−13 52 5.19	10.53
γ Tauri	4	4 12 37.462	3.408	+15 19 18.06	9.05
ε Tauri	4.3	4 21 15.637	3.495	+18 53 57.33	8.36
α Tauri (*Aldebaran*) .	1	4 28 41.535	3.436	+16 15 15.34	7.61
* 9 Camelopardalis . .	4	4 41 32.098	+ 5.914	+66 7 30.56	+ 6.74
ι Aurigæ	3	4 48 47.405	3.897	+32 57 51.98	6.12
11 Orionis	5	4 57 22.273	3.425	+15 13 36.37	5.40
α Aurigæ (*Capella*) .	1	5 7 23.020	4.422	+45 52 1.62	4.14
β Orionis (*Rigel*) . .	1	5 8 28.979	2.881	− 8 20 55.99	4.47
β Tauri	2	5 18 19.664	+ 3.788	+28 29 55.30	+ 3.45
* Groombridge 966 .	6.7	5 22 53.632	7.989	+74 57 18.36	3.23
δ Orionis	2	5 25 34.230	3.064	− 0 23 39.64	2.99
α Leporis	3	5 27 10.467	2.646	−17 54 50.04	2.88
ε Orionis	2	5 29 49.222	3.042	− 1 17 3.11	2.63
α Columbæ	2	5 35 5.268	+ 2.171	−34 8 32.35	+ 2.15
α Orionis	var.	5 48 21.056	3.247	+ 7 22 53.91	+ 1.03
*22 Camelopardalis (H.)	5.4	6 4 57.314	6.618	+69 21 36.13	− 0.54
μ Geminorum . . .	3	6 15 20.293	3.632	+22 34 34.25	1.45
α Argus (*Canopus*) .	1	6 21 9.401	1.330	−52 37 39.42	1.85
γ Geminorum . . .	2.3	6 30 25.992	+ 3.468	+16 30 17.75	− 2.68
α Canis Maj. (*Sirius*) .	1	6 39 35.709	2.645	−16 32 40.97	4.65
*51 Cephei (H.) . . .	5	6 40 44.183	30.257	+87 14 8.04	3.59
ε Canis Majoris . .	2.1	6 53 40.519	2.358	−28 48 6.99	4.65
δ Canis Majoris . .	2	7 3 16.153	+ 2.440	−26 11 38.80	− 5.43

* Circumpolar Stars.

MEAN PLACES FOR 1874.0. (Jan. 0^{d}—.195, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
δ Geminorum . . .	3.4	7 12 35.844	+3.591	+22 12 44.80	− 6.24
* Piazzi vii. 67 . . .	6	7 17 45.111	6.311	+68 43 8.47	6.75
α Geminor. (*Castor*) .	2.1	7 26 33.207	3.839	+32 9 45.35	7.48
α Can. Min. (*Procyon*)	1	7 32 42.413	3.146	+ 5 32 45.86	8.94
β Geminor. (*Pollux*) .	1.2	7 37 36.231	3.681	+28 19 43.33	8.33
φ Geminorum . . .	5	7 45 47.092	+3.684	+27 5 24.02	− 8.95
* 3 Ursæ Majoris (H.) .	6	8 0 14.906	6.067	+68 50 29.70	10.07
15 Argus (ι)	3	8 2 10.769	2.556	−23 56 31.70	10.12
ε Hydræ	3.4	8 40 6.199	3.184	+ 6 52 47.68	12.92
ι Ursæ Majoris . . .	3	8 50 34.289	4.139	+48 32 4.18	13.85
* σ^2 Ursæ Majoris . . .	5	8 59 16.676	+5.375	+67 38 35.61	−14.23
κ Cancri	5	9 0 55.256	3.255	+11 10 27.01	14.22
ι Argus	2	9 13 42.954	1.601	−58 44 46.74	14.94
* 1 Draconis (H.) . .	4.5	9 18 56.844	9.121	+81 52 49.19	15.30
α Hydræ	2	9 21 23.753	2.949	− 8 6 48.08	15.40
* *d* Ursæ Majoris . . .	5.4	9 23 18.109	+5.426	+70 22 55.06	−15.50
θ Ursæ Majoris . . .	3	9 24 25.041	4.050	+52 15 0.45	16.16
ε Leonis	3	9 38 41.801	3.419	+24 21 12.53	16.37
μ Leonis	4	9 45 35.623	3.424	+26 35 57.90	16.75
α Leonis (***Regulus***) .	1.2	10 1 39.647	3.203	+12 34 56.82	17.42
*32 Ursæ Majoris . . .	6	10 8 51.578	+4.438	+65 44 7.77	−17.78
γ^1 Leonis	2	10 13 1.394	3.317	+20 28 42.12	18.03
* 9 Draconis (H.) . .	5.4	10 24 19.729	5.305	+76 21 38.37	18.36
ρ Leonis	4	10 26 10.590	3.166	+ 9 57 15.81	18.40
η Argus	2	10 40 10.601	2.310	−59 1 17.77	18.76
l Leonis	5	10 42 37.972	+3.159	+11 12 41.90	−18.92
α Ursæ Majoris . . .	2	10 55 56.073	3.759	+62 25 49.99	19.36
δ Leonis	2.3	11 7 24.361	3.202	+21 12 50.15	19.66
δ Crateris	3.4	11 13 2.564	2.996	−14 5 48.28	19.44
τ Leonis	5	11 21 27.466	3.088	+ 3 33 0.30	19.78
* λ Draconis	3.4	11 23 53.924	+3.638	+70 1 32.90	−19.86
υ Leonis	5.4	11 30 29.895	3.071	− 0 7 41.03	19.84
β Leonis	2	11 42 37.907	3.066	+15 16 35.95	20.09
γ Ursæ Majoris . . .	2.3	11 47 11.662	3.188	+54 23 43.01	20.02
ο Virginis	4	11 58 47.456	3.059	+ 9 25 59.13	20.00
* 4 Draconis (H.) . .	5.4	12 6 16.468	+2.905	+78 18 57.72	−20.05
* β Chamæleontis . .	5	12 10 59.301	3.345	−78 36 46.13	20.04
η Virginis	3.4	12 13 27.616	3.068	+ 0 2 1.66	20.04
α^1 Crucis	1	12 19 35.761	3.267	−62 23 57.90	19.93
β Corvi	2.3	12 27 46.294	3.138	−22 41 57.14	19.94
* κ Draconis	3.4	12 28 5.691	+2.600	+70 28 57.37	−19.93
*32 Camelop. (H.) (*foll.*)	5.4	12 48 13.432	0.359	+84 5 50.64	19.63
12 Canum Venaticorum	3	12 50 7.869	2.816	+38 59 57.87	19.51
θ Virginis	4.5	13 3 25.683	3.101	− 4 51 55.93	19.31
α Virginis (*Spica*) . .	1	13 18 33.448	3.153	−10 30 9.69	18.91
ζ Virginis	3.4	13 28 16.443	+3.053	+ 0 2 57.77	−18.52
η Ursæ Majoris . . .	2	13 42 34.482	2.374	+49 56 34.05	18.10
η Bootis	3	13 48 41.163	2.858	+19 1 49.75	18.18
β Centauri	1	13 54 56.909	4.164	−59 45 50.24	17.65
* α Draconis	3.4	14 0 58.757	+1.623	+64 58 40.96	−17.36

* Circumpolar Stars.

MEAN PLACES FOR 1874.0. (Jan. 0—^{d}.195, Washington.)

Star's Name.	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h	m	s	s	°	′	″	″
α Bootis (*Arcturus*)	1	14	9	54.879	+ 2.734	+19	50	22.98	−18.88
θ Bootis	4.3	14	20	54.401	+ 2.043	+52	26	2.44	16.77
* 5 Ursæ Minoris	5.4	14	27	48.985	− 0.208	+76	15	20.44	16.04
α^2 Centauri	1	14	31	4.394	+ 4.035	−60	18	39.63	15.03
ε Bootis	2.3	14	39	29.089	2.621	+27	36	24.10	15.36
α^2 Libræ	2.3	14	43	54.627	+ 3.307	−15	30	59.29	−15.20
* β Ursæ Minoris	2	14	51	5.643	− 0.247	+74	40	12.09	14.75
β Bootis	3	14	57	11.988	+ 2.260	+40	53	19.00	14.39
β Libræ	2	15	10	13.715	3.220	− 8	54	57.98	13.53
μ^1 Bootis	4.3	15	19	43.895	+ 2.267	+37	49	13.09	12.80
* γ^2 Ursæ Minoris	3	15	20	56.637	− 0.145	+72	16	56.93	−12.80
α Coronæ Borealis	2	15	29	21.214	+ 2.539	+27	8	25.02	12.33
α Serpentis	2.3	15	38	3.738	2.950	+ 6	49	25.73	11.58
ε Serpentis	3.4	15	44	32.190	+ 2.987	+ 4	51	31.38	11.10
* ζ Ursæ Minoris	4.5	15	48	36.204	− 2.282	+78	10	51.76	10.88
ε Coronæ Borealis	4	15	52	22.384	+ 2.485	+27	14	39.97	−10.63
δ Scorpii	2.3	15	52	53.135	3.537	−22	15	38.12	10.56
β^1 Scorpii	2	15	58	6.742	3.477	−19	27	30.72	10.19
* Groombridge 2320	6.5	16	5	58.994	0.134	+68	8	31.95	9.50
δ Ophiuchi	3	16	7	44.616	+ 3.138	− 3	22	4.00	9.56
τ Herculis	3.4	16	15	57.115	+ 1.798	+46	36	51.90	− 8.76
α Scorpii (*Antares*)	1.2	16	21	41.086	3.669	−26	9	0.17	8.37
η Draconis	3.2	16	22	17.379	+ 0.805	+61	47	59.33	8.23
* A Draconis	5	16	28	14.383	− 0.141	+69	2	26.46	7.78
ζ Ophiuchi	3.2	16	30	13.328	+ 3.298	−10	18	34.30	7.61
* α Trianguli Australis	2	16	35	20.690	+ 6.285	−68	47	33.42	− 7.32
η Herculis	3	16	38	34.608	2.054	+39	9	48.39	7.04
κ Ophiuchi	3.4	16	51	42.243	2.835	+ 9	34	22.75	5.86
d Herculis	5	16	56	57.117	+ 2.209	+33	45	8.66	5.42
* ε Ursæ Minoris	4.5	16	58	57.285	− 6.379	+82	14	28.05	5.28
α^1 Herculis	var.	17	8	54.147	+ 2.734	+14	32	9.21	− 4.39
44 Ophiuchi	5	17	18	40.578	3.659	−24	3	23.13	3.68
β Draconis	3.2	17	27	35.127	1.351	+52	23	43.15	2.83
α Ophiuchi	2	17	29	5.135	+ 2.783	+12	39	13.45	2.91
* ω Draconis	5	17	37	41.476	− 0.355	+68	48	55.61	1.66
μ Herculis	3.4	17	41	31.667	+ 2.345	+27	47	46.01	− 2.34
* ψ^1 Draconis (*pr.*)	4.5	17	44	10.966	− 1.082	+72	12	36.43	1.63
γ Draconis	2.3	17	53	40.976	+ 1.394	+51	30	16.03	0.59
γ^2 Sagittarii	3.4	17	57	42.872	3.852	−30	25	23.29	− 0.42
μ^1 Sagittarii	4	18	6	13.684	3.587	−21	5	21.53	+ 0.55
* σ Octantis	6	18	13	35.139	+108.405	−89	16	39.38	+ 1.16
* δ Ursæ Minoris	4.5	18	12	58.735	−19.966	+86	36	26.24	1.18
η Serpentis	3	18	14	47.346	+ 3.099	− 2	55	45.20	0.62
1 Aquilæ (3 H. Scuti)	4.5	18	28	20.962	3.264	− 8	19	47.45	2.17
α Lyræ (*Vega*)	1	18	32	40.338	+ 2.032	+38	40	3.51	3.13
β Lyræ	var.	18	45	25.669	+ 2.214	+33	13	3.81	+ 3.94
σ Sagittarii	2.3	18	47	27.116	+ 3.723	−26	27	1.93	4.06
* 50 Draconis	6	18	50	25.520	− 1.900	+75	17	2.05	4.44
ζ Aquilæ	3	18	59	37.050	+ 2.755	+13	40	41.06	+ 5.08

* Circumpolar Stars.

MEAN PLACES FOR 1874.0. (Jan. 0$^{\mathrm{d}}$—.195, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
d Sagittarii	5	19 10 15.693	+ 3.513	−19 10 26.69	+ 6.09
* δ Draconis	3	19 12 31.240	+ 0.033	+67 26 23.06	6.31
* τ Draconis	5	19 17 57.824	− 1.109	+73 7 14.58	6.78
δ Aquilæ	3.4	19 19 8.658	+ 3.024	+ 2 51 56.08	6.88
κ Aquilæ	5	19 30 6.693	3.230	− 7 18 18.86	7.70
γ Aquilæ	3	19 40 16.144	+ 2.853	+10 18 28.55	+ 8.50
α Aquilæ (*Altair*) .	1.2	19 44 38.100	+ 2.929	+ 8 32 14.24	9.22
* ε Draconis	4	19 48 35.271	− 0.173	+69 56 47.83	9.15
β Aquilæ	4	19 49 7.403	+ 2.947	+ 6 5 37.77	8.72
* λ Ursæ Minoris . .	6.7	19 50 18.244	−60.356	+88 55 41.66	9.28
τ Aquilæ	6.5	19 57 59.066	+ 2.934	+ 6 55 27.00	+ 9.90
α² Capricorni . . .	3.4	20 11 3.702	+ 3.333	−12 56 0.58	10.87
* κ Cephei	4.5	20 13 5.532	− 1.899	+77 19 50.15	11.00
α Pavonis	2	20 15 40.363	+ 4.793	−57 8 9.00	11.16
π Capricorni . . .	5	20 20 6.423	3.441	−18 37 21.91	11.48
ε Delphini	4	20 27 11.555	+ 2.866	+10 52 35.61	+11.99
* Groombridge 3241 .	6.7	20 30 32.099	− 0.210	+72 6 17.10	12.22
α Cygni	2.1	20 37 8.192	+ 2.044	+44 49 51.48	12.70
μ Aquarii	5.4	20 45 51.336	3.240	− 9 27 15.35	13.27
ν Cygni	4	20 52 28.548	+ 2.234	+40 41 0.11	13.72
* 12 Year Cat. 1879 .	6	20 53 14.063	− 2.501	+80 4 41.81	+13.71
61 Cygni (*pr.*) . . .	5.6	21 1 15.046	+ 2.687	+38 7 51.76	17.50
ζ Cygni	3	21 7 34.428	2.550	+29 42 40.40	14.59
α Cephei	3.2	21 15 34.265	1.438	+62 3 6.43	15.12
1 Pegasi	4.5	21 16 15.635	2.774	+19 16 0.75	15.24
β Aquarii	3	21 24 55.490	+ 3.164	− 6 7 26.33	+15.64
* β Cephei	3	21 27 1.559	0.799	+70 0 26.92	15.71
ξ Aquarii	5.4	21 31 2.560	3.198	− 8 25 4.42	15.95
ε Pegasi	2.3	21 37 59.871	2.948	+ 9 17 54.70	16.33
* 11 Cephei	5	21 40 4.175	0.906	+70 43 52.54	16.50
μ Capricorni . . .	5	21 46 25.494	+ 3.279	−14 8 35.91	+16.78
* 79 Draconis	6.7	21 51 17.914	0.736	+73 6 22.25	16.97
α Aquarii	3	21 59 18.696	3.084	− 0 55 51.33	17.34
α Gruis	2	22 0 16.999	3.813	−47 34 11.20	17.20
θ Aquarii	4.5	22 10 11.020	3.171	− 8 24 34.85	17.79
π Aquarii	5.4	22 18 50.505	+ 3.065	+ 0 44 19.97	+18.14
η Aquarii	4.3	22 28 52.854	3.083	− 0 45 57.96	18.44
*226 Cephei (B.) . . .	5.6	22 30 3.259	1.083	+75 34 37.38	18.52
ζ Pegasi	3.4	22 35 10.625	2.989	+10 10 28.26	18.70
* ι Cephei	4.3	22 45 11.879	2.118	+65 32 16.47	18.86
λ Aquarii	4	22 46 2.346	+ 3.131	− 8 14 57.19	+19.08
α Pis. Aus. (*Fomalhaut*)	1.2	22 50 41.048	3.329	−30 17 21.21	18.99
α Pegasi (*Markab*) .	2	22 58 29.119	2.984	+14 31 40.98	19.32
* ο Cephei . . .	6.5	23 13 27.612	2.437	+67 25 19.03	19.62
θ Piscium	4.5	23 21 34.580	3.041	+ 5 41 14.92	19.75
ι Piscium	4.5	23 33 28.243	+ 3.085	+ 4 56 37.39	+19.49
* γ Cephei	3.4	23 34 11.407	2.404	+76 55 45.07	20.08
* Groombridge 4163 .	7	23 48 43.475	2.852	+73 42 32.28	20.00
ω Piscium	4	23 52 50.518	+ 3.078	+ 6 9 57.40	+19.94

* Circumpolar Stars.

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 11	° ′ 88 38		h m 1 11	° ′ 88 38		h m 1 11	° ′ 88 38		h m 1 11	° ′ 88 38
	s	″		s	″		s	″		s	″
0.3	86.74	32.7	1.2	57.69	33.2	1.1	36.97	28.3	1.0	26.47	19.5
1.3	85.91	32.9	2.2	56.72	33.1	2.1	36.29	28.1	2.0	26.44	19.2
2.3	85.04	33.0	3.2	55.76	33.0	3.1	35.65	27.8	3.0	26.48	18.8
3.3	84.11	33.1	4.2	54.85	32.8	4.1	35.07	27.5	4.0	26.56	18.5
4.3	83.13	33.3	5.2	53.98	32.7	5.1	34.54	27.2	5.0	26.67	18.2
5.3	82.11	33.4	6.2	53.16	32.5	6.1	34.07	27.0	6.0	26.77	17.9
6.3	81.09	33.4	7.2	52.40	32.4	7.1	33.67	26.7	7.0	26.86	17.6
7.2	80.09	33.5	8.2	51.68	32.2	8.1	33.31	26.4	8.0	26.92	17.4
8.2	79.12	33.5	9.2	50.98	32.1	9.1	32.95	26.1	9.0	26.95	17.1
9.2	78.19	33.5	10.2	50.27	32.0	10.1	32.59	25.9	10.0	26.95	16.8
10.2	77.31	33.6	11.2	49.55	31.8	11.1	32.20	25.6	11.0	26.94	16.5
11.2	76.47	33.6	12.2	48.80	31.7	12.1	31.78	25.4	12.0	26.94	16.2
12.2	75.65	33.6	13.1	48.00	31.6	13.1	31.32	25.2	13.0	26.98	15.9
13.2	74.84	33.6	14.1	47.17	31.5	14.1	30.85	24.9	14.0	27.07	15.6
14.2	74.01	33.7	15.1	46.32	31.3	15.1	30.38	24.6	15.0	27.23	15.2
15.2	73.15	33.7	16.1	45.46	31.1	16.1	29.92	24.3	16.0	27.46	14.9
16.2	72.24	33.8	17.1	44.64	30.9	17.1	29.50	24.0	17.0	27.75	14.6
17.2	71.28	33.8	18.1	43.85	30.7	18.1	29.14	23.7	18.0	28.07	14.3
18.2	70.28	33.8	19.1	43.11	30.5	19.1	28.86	23.4	19.0	28.40	14.0
19.2	69.25	33.8	20.1	42.45	30.2	20.1	28.64	23.1	20.0	28.73	13.7
20.2	68.22	33.8	21.1	41.85	30.0	21.0	28.47	22.7	21.0	29.04	13.5
21.2	67.22	33.8	22.1	41.28	29.8	22.0	28.33	22.4	22.0	29.32	13.2
22.2	66.26	33.7	23.1	40.73	29.6	23.0	28.19	22.1	23.0	29.57	13.0
23.2	65.36	33.7	24.1	40.18	29.4	24.0	28.05	21.9	24.0	29.79	12.7
24.2	64.51	33.6	25.1	39.60	29.2	25.0	27.89	21.6	25.0	30.01	12.5
25.2	63.71	33.5	26.1	38.99	29.0	26.0	27.68	21.3	25.9	30.25	12.2
26.2	62.92	33.5	27.1	38.34	28.8	27.0	27.46	21.1	26.9	30.52	11.9
27.2	62.13	33.4	28.1	37.66	28.6	28.0	27.21	20.8	27.9	30.85	11.6
28.2	61.33	33.4	29.1	36.97	28.3	29.0	26.96	20.5	28.9	31.24	11.3
29.2	60.49	33.3	30.1	36.29	28.1	30.0	26.74	20.2	29.9	31.70	11.0
30.2	59.60	33.3	31.1	35.65	27.8	31.0	26.58	19.8	30.9	32.21	10.7
31.2	58.66	33.2	32.1	35.07	27.5	32.0	26.47	19.5	31.9	32.75	10.4

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
	1 11	88 38		1 11	88 38		1 12	88 38		1 12	88 38
	s	″		s	″		s	″		s	″
1.9	32.75	10.4	1.9	52.53	4.5	1.8	18.44	3.3	1.7	45.74	7.1
2.9	33.30	10.2	2.8	53.28	4.4	2.8	19.24	3.4	2.7	46.59	7.2
3.9	33.84	10.0	3.8	54.00	4.3	3.8	20.05	3.4	3.7	47.47	7.4
4.9	34.34	9.7	4.8	54.69	4.2	4.8	20.89	3.4	4.7	48.39	7.6
5.9	34.82	9.5	5.8	55.39	4.1	5.8	21.79	3.4	5.7	49.32	7.8
6.9	35.26	9.3	6.8	56.13	4.0	6.8	22.74	3.5	6.7	50.23	8.0
7.9	35.68	9.1	7.8	56.92	3.9	7.8	23.74	3.5	7.7	51.11	8.3
8.9	36.10	8.9	8.8	57.76	3.8	8.7	24.75	3.6	8.7	51.93	8.6
9.9	36.54	8.7	9.8	58.65	3.7	9.7	25.78	3.7	9.7	52.69	8.8
10.9	37.02	8.4	10.8	59.59	3.6	10.7	26.79	3.8	10.7	53.40	9.1
11.9	37.55	8.1	11.8	60.56	3.5	11.7	27.75	3.9	11.7	54.07	9.4
12.9	38.16	7.9	12.8	61.52	3.4	12.7	28.66	4.0	12.7	54.73	9.6
13.9	38.83	7.6	13.8	62.46	3.4	13.7	29.53	4.1	13.6	55.39	9.8
14.9	39.54	7.4	14.8	63.36	3.4	14.7	30.36	4.3	14.6	56.07	10.1
15.9	40.27	7.2	15.8	64.22	3.3	15.7	31.16	4.4	15.6	56.78	10.3
16.9	40.99	7.0	16.8	65.04	3.3	16.7	31.95	4.5	16.6	57.54	10.5
17.9	41.70	6.9	17.8	65.83	3.3	17.7	32.75	4.6	17.6	58.35	10.8
18.9	42.38	6.7	18.8	66.61	3.3	18.7	33.60	4.7	18.6	59.17	11.1
19.9	43.01	6.5	19.8	67.40	3.2	19.7	34.49	4.8	19.6	59.99	11.3
20.9	43.60	6.4	20.8	68.21	3.2	20.7	35.43	4.9	20.6	60.79	11.6
21.9	44.17	6.2	21.8	69.06	3.1	21.7	36.41	5.1	21.6	61.54	11.9
22.9	44.76	6.0	22.8	69.98	3.1	22.7	37.40	5.2	22.6	62.24	12.2
23.9	45.37	5.9	23.8	70.95	3.0	23.7	38.38	5.4	23.6	62.87	12.5
24.9	46.02	5.7	24.8	71.96	3.0	24.7	39.34	5.6	24.6	63.46	12.9
25.9	46.73	5.5	25.8	72.97	3.0	25.7	40.25	5.8	25.6	64.01	13.2
26.9	47.50	5.4	26.8	73.98	3.0	26.7	41.11	6.0	26.6	64.55	13.5
27.9	48.32	5.1	27.8	74.96	3.1	27.7	41.92	6.2	27.6	65.09	13.8
28.9	49.18	4.9	28.8	75.90	3.1	28.7	42.69	6.4	28.6	65.66	14.1
29.9	50.05	4.8	29.8	76.78	3.2	29.7	43.44	6.6	29.6	66.28	14.3
30.9	50.91	4.7	30.8	77.62	3.3	30.7	44.18	6.7	30.6	66.94	14.6
31.9	51.74	4.6	31.8	78.44	3.3	31.7	44.94	6.9	31.6	67.62	14.9
32.9	52.53	4.5	32.8	79.24	3.4	32.7	45.74	7.1	32.6	68.31	15.2

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 13	° ′ 88 38		h m 1 13	° ′ 88 38		h m 1 13	° ′ 88 38		h m 1 12	° ′ 88 38
	s	″		s	″		s	″		s	″
1.6	8.31	15.2	1.5	20.89	26.1	1.4	21.04	38.1	1.3	68.12	48.1
2.6	8.99	15.5	2.5	21.13	26.5	2.4	20.72	38.5	2.3	67.45	48.4
3.6	9.65	15.9	3.5	21.31	26.9	3.4	20.39	38.9	3.3	66.82	48.6
4.6	10.26	16.3	4.5	21.43	27.3	4.4	20.06	39.2	4.3	66.22	48.9
5.6	10.81	16.6	5.5	21.50	27.7	5.4	19.76	39.6	5.3	65.65	49.1
6.6	11.29	17.0	6.5	21.55	28.1	6.4	19.50	39.9	6.3	65.08	49.3
7.6	11.73	17.4	7.5	21.61	28.5	7.4	19.28	40.2	7.3	64.50	49.6
8.6	12.13	17.7	8.5	21.69	28.8	8.4	19.07	40.6	8.3	63.90	49.9
9.6	12.53	18.1	9.5	21.80	29.2	9.4	18.86	40.9	9.3	63.24	50.2
10.6	12.93	18.4	10.5	21.94	29.6	10.4	18.63	41.3	10.3	62.52	50.4
11.6	13.37	18.7	11.5	22.11	29.9	11.4	18.34	41.7	11.3	61.74	50.7
12.6	13.84	19.0	12.5	22.29	30.3	12.4	18.00	42.1	12.3	60.92	51.0
13.6	14.35	19.3	13.5	22.47	30.7	13.4	17.60	42.4	13.3	60.07	51.2
14.6	14.89	19.7	14.5	22.62	31.1	14.4	17.14	42.8	14.3	59.21	51.4
15.6	15.43	20.0	15.5	22.72	31.5	15.4	16.63	43.2	15.3	58.36	51.6
16.6	15.96	20.4	16.5	22.75	31.9	16.4	16.10	43.5	16.3	57.55	51.8
17.6	16.46	20.8	17.5	22.71	32.4	17.4	15.58	43.8	17.3	56.78	51.9
18.6	16.89	21.2	18.5	22.62	32.8	18.4	15.07	44.1	18.3	56.05	52.1
19.6	17.26	21.6	19.5	22.50	33.2	19.4	14.59	44.4	19.3	55.35	52.3
20.5	17.57	22.0	20.5	22.36	33.6	20.4	14.15	44.7	20.3	54.65	52.5
21.5	17.83	22.4	21.5	22.23	33.9	21.4	13.74	45.0	21.3	53.94	52.7
22.5	18.06	22.8	22.5	22.12	34.3	22.4	13.34	45.3	22.3	53.19	52.9
23.5	18.30	23.1	23.5	22.04	34.6	23.4	12.94	45.6	23.3	52.39	53.1
24.5	18.55	23.5	24.5	22.00	35.0	24.4	12.52	46.0	24.3	51.53	53.3
25.5	18.84	23.8	25.5	22.00	35.3	25.4	12.03	46.3	25.3	50.62	53.4
26.5	19.17	24.1	26.4	21.99	35.7	26.4	11.49	46.6	26.3	49.67	53.6
27.5	19.53	24.5	27.4	21.96	36.1	27.4	10.89	47.0	27.3	48.70	53.8
28.5	19.90	24.8	28.4	21.90	36.5	28.4	10.23	47.3	28.3	47.73	53.9
29.5	20.26	25.2	29.4	21.78	36.9	29.4	9.53	47.6	29.3	46.80	54.0
30.5	20.59	25.6	30.4	21.59	37.3	30.4	8.82	47.9	30.3	45.90	54.1
31.5	20.89	26.1	31.4	21.34	37.7	31.3	8.12	48.1	31.3	45.05	54.2
32.5	21.13	26.5	32.4	21.04	38.1	32.3	7.45	48.4	32.3	44.24	54.3

APPARENT PLACES OF 51 CEPHEI, (*Hev.*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 41	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14
	s	″		s	″		s	″		s	″
0.5	7.36	14.7	1.4	66.35	25.0	1.3	58.58	31.6	1.2	45.94	34.1
1.5	7.51	15.1	2.4	66.15	25.3	2.3	58.20	31.8	2.2	45.48	34.0
2.5	7.66	15.4	3.4	65.92	25.6	3.3	57.78	31.9	3.2	45.03	34.0
3.5	7.82	15.7	4.4	65.68	25.9	4.3	57.36	32.1	4.2	44.60	33.9
4.5	7.91	16.1	5.4	65.41	26.2	5.3	56.93	32.3	5.2	44.20	33.8
5.5	7.98	16.5	6.4	65.15	26.4	6.3	56.51	32.4	6.2	43.83	33.8
6.5	8.02	16.8	7.4	64.89	26.7	7.3	56.11	32.5	7.2	43.48	33.7
7.5	8.02	17.2	8.4	64.65	26.9	8.3	55.72	32.6	8.2	43.12	33.7
8.5	8.01	17.5	9.4	64.43	27.1	9.3	55.36	32.7	9.2	42.76	33.6
9.5	7.98	17.8	10.4	64.22	27.4	10.3	55.01	32.8	10.2	42.39	33.6
10.5	7.96	18.1	11.4	64.02	27.6	11.3	54.67	32.9	11.2	41.99	33.5
11.5	7.94	18.4	12.4	63.82	27.9	12.3	54.32	33.0	12.2	41.57	33.5
12.5	7.94	18.7	13.4	63.60	28.1	13.3	53.97	33.1	13.2	41.13	33.4
13.5	7.96	19.0	14.4	63.37	28.4	14.3	53.58	33.2	14.2	40.68	33.4
14.5	7.98	19.3	15.4	63.11	28.7	15.3	53.17	33.4	15.2	40.24	33.3
15.5	8.01	19.6	16.4	62.80	29.0	16.3	52.74	33.5	16.2	39.81	33.2
16.4	8.03	20.0	17.4	62.47	29.2	17.3	52.27	33.6	17.2	39.41	33.0
17.4	8.03	20.3	18.4	62.11	29.5	18.3	51.80	33.7	18.2	39.03	32.9
18.4	8.00	20.7	19.4	61.76	29.7	19.3	51.35	33.7	19.2	38.67	32.7
19.4	7.94	21.0	20.4	61.40	29.9	20.3	50.89	33.8	20.2	38.34	32.6
20.4	7.84	21.4	21.4	61.05	30.1	21.3	50.45	33.8	21.2	38.02	32.5
21.4	7.72	21.7	22.4	60.73	30.2	22.3	50.05	33.8	22.2	37.71	32.3
22.4	7.57	22.0	23.3	60.42	30.4	23.3	49.66	33.8	23.2	37.39	32.2
23.4	7.42	22.3	24.3	60.14	30.5	24.3	49.29	33.8	24.2	37.06	32.1
24.4	7.27	22.6	25.3	59.85	30.7	25.3	48.93	33.8	25.2	36.70	32.0
25.4	7.14	22.9	26.3	59.57	30.9	26.3	48.56	33.9	26.2	36.32	31.9
26.4	7.02	23.2	27.3	59.27	31.0	27.3	48.18	33.9	27.2	35.93	31.7
27.4	6.92	23.4	28.3	58.93	31.3	28.3	47.78	34.0	28.2	35.54	31.6
28.4	6.83	23.7	29.3	58.58	31.6	29.3	47.34	34.0	29.2	35.15	31.4
29.4	6.74	24.0	30.3	58.20	31.8	30.3	46.88	34.1	30.2	34.78	31.2
30.4	6.63	24.3	31.3	58.78	31.9	31.2	46.41	34.1	31.2	34.44	31.0
31.4	6.50	24.6	32.3	58.36	32.1	32.2	45.94	34.1	32.2	34.13	30.8

APPARENT PLACES OF 51 CEPHEI, (*Hev.*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 13
	s	″		s	″		s	″		s	″
1.2	34.44	31.0	1.1	27.60	23.5	1.0	27.76	14.5	1.9	35.06	65.4
2.2	34.13	30.8	2.1	27.55	23.2	2.0	27.89	14.2	2.9	35.35	65.1
3.2	33.85	30.6	3.1	27.49	23.0	3.0	28.00	14.0	3.9	35.66	64.8
4.2	33.59	30.4	4.1	27.41	22.7	4.0	28.10	13.7	4.9	36.00	64.5
5.2	33.34	30.2	5.1	27.32	22.5	5.0	28.18	13.4	5.9	36.36	64.2
6.2	33.10	30.0	6.1	27.21	22.2	6.0	28.28	13.1	6.9	36.76	64.0
7.1	32.85	29.8	7.1	27.09	22.0	7.0	28.39	12.7	7.9	37.18	63.7
8.1	32.58	29.6	8.1	26.97	21.7	8.0	28.53	12.4	8.9	37.62	63.5
9.1	32.28	29.5	9.1	26.86	21.4	9.0	28.70	12.1	9.9	38.05	63.2
10.1	31.97	29.3	10.1	26.78	21.0	10.0	28.90	11.7	10.9	38.47	63.0
11.1	31.66	29.1	11.1	26.72	20.7	11.0	29.13	11.4	11.9	38.88	62.8
12.1	31.35	28.9	12.1	26.68	20.4	12.0	29.37	11.1	12.9	39.26	62.6
13.1	31.04	28.6	13.0	26.68	20.0	13.0	29.63	10.8	13.9	39.62	62.4
14.1	30.75	28.3	14.0	26.71	19.7	14.0	29.89	10.5	14.9	39.97	62.2
15.1	30.50	28.1	15.0	26.76	19.4	15.0	30.13	10.3	15.9	40.33	62.0
16.1	30.29	27.8	16.0	26.81	19.1	16.0	30.35	10.0	16.9	40.71	61.8
17.1	30.10	27.5	17.0	26.86	18.8	17.0	30.56	9.8	17.9	41.10	61.5
18.1	29.93	27.3	18.0	26.89	18.6	18.0	30.76	9.5	18.9	41.52	61.3
19.1	29.78	27.0	19.0	26.90	18.3	18.9	30.95	9.2	19.9	41.97	61.0
20.1	29.62	26.8	20.0	26.89	18.0	19.9	31.15	8.9	20.9	42.44	60.8
21.1	29.45	26.6	21.0	26.88	17.7	20.9	31.36	8.6	21.9	42.94	60.6
22.1	29.26	26.4	22.0	26.87	17.4	21.9	31.60	8.3	22.9	43.44	60.4
23.1	29.05	26.1	23.0	26.87	17.1	22.9	31.88	8.0	23.9	43.94	60.3
24.1	28.83	25.9	24.0	26.89	16.8	23.9	32.19	7.6	24.8	44.42	60.1
25.1	28.61	25.6	25.0	26.94	16.4	24.9	32.51	7.4	25.8	44.88	59.9
26.1	28.39	25.4	26.0	27.03	16.1	25.9	32.86	7.1	26.8	45.32	59.8
27.1	28.18	25.1	27.0	27.15	15.7	26.9	33.22	6.8	27.8	45.75	59.7
28.1	28.01	24.7	28.0	27.30	15.4	27.9	33.57	6.6	28.8	46.16	59.5
29.1	27.87	24.4	29.0	27.45	15.1	28.9	33.89	6.3	29.8	46.58	59.3
30.1	27.76	24.1	30.0	27.61	14.8	29.9	34.20	6.1	30.8	47.01	59.1
31.1	27.67	23.8	31.0	27.76	14.5	30.9	34.50	5.9	31.8	47.48	58.9
32.1	27.60	23.5	32.0	27.89	14.2	31.9	34.78	5.6	32.8	47.96	58.7

APPARENT PLACES OF 51 CEPHEI, (*Hev.*) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 40	° ' 87 13		h m 6 41	° ' 87 13		h m 6 41	° ' 87 13		h m 6 41	° ' 87 14
	s	"		s	"		s	"		s	"
1.8	47.96	58.7	1.7	3.87	56.0	1.7	20.69	57.6	1.6	33.81	3.6
2.8	48.47	58.5	2.7	4.48	55.9	2.7	21.18	57.8	2.6	34.11	3.8
3.8	49.01	58.4	3.7	5.08	55.9	3.7	21.64	58.0	3.6	34.40	4.1
4.8	49.57	58.2	4.7	5.66	56.0	4.7	22.09	58.2	4.6	34.70	4.3
5.8	50.12	58.1	5.7	6.21	56.0	5.6	22.53	58.3	5.6	35.01	4.5
6.8	50.66	58.0	6.7	6.74	56.0	6.6	22.97	58.4	6.6	35.34	4.8
7.8	51.19	57.9	7.7	7.25	56.1	7.6	23.43	58.5	7.6	35.68	5.0
8.8	51.69	57.8	8.7	7.75	56.1	8.6	23.90	58.7	8.6	36.03	5.3
9.8	52.17	57.7	9.7	8.24	56.1	9.6	24.39	58.8	9.6	36.39	5.5
10.8	52.64	57.6	10.7	8.75	56.1	10.6	24.90	58.9	10.6	36.74	5.8
11.8	53.11	57.5	11.7	9.27	56.1	11.6	25.42	59.1	11.5	37.07	6.1
12.8	53.58	57.4	12.7	9.82	56.1	12.6	25.94	59.2	12.5	37.37	6.4
13.8	54.06	57.2	13.7	10.39	56.1	13.6	26.45	59.4	13.5	37.64	6.8
14.8	54.56	57.1	14.7	10.98	56.1	14.6	26.95	59.7	14.5	37.87	7.1
15.8	55.09	57.0	15.7	11.58	56.1	15.6	27.42	59.9	15.5	38.08	7.4
16.8	55.66	56.8	16.7	12.18	56.2	16.6	27.85	60.1	16.5	38.27	7.7
17.8	56.24	56.7	17.7	12.76	56.2	17.6	28.25	60.3	17.5	38.46	8.0
18.8	56.83	56.6	18.7	13.32	56.3	18.6	28.63	60.6	18.5	38.65	8.3
19.8	57.41	56.6	19.7	13.86	56.4	19.6	29.01	60.8	19.5	38.85	8.5
20.8	57.99	56.5	20.7	14.37	56.5	20.6	29.39	61.0	20.5	39.08	8.8
21.8	58.55	56.5	21.7	14.86	56.6	21.6	29.78	61.1	21.5	39.32	9.1
22.8	59.07	56.5	22.7	15.34	56.7	22.6	30.19	61.3	22.5	39.57	9.4
23.8	59.58	56.4	23.7	15.82	56.8	23.6	30.62	61.5	23.5	39.82	9.7
24.8	60.08	56.4	24.7	16.32	56.8	24.6	31.06	61.7	24.5	40.05	10.0
25.8	60.56	56.4	25.7	16.83	56.9	25.6	31.51	61.9	25.5	40.25	10.4
26.8	61.06	56.3	26.7	17.35	57.0	26.6	31.95	62.2	26.5	40.42	10.7
27.8	61.57	56.2	27.7	17.90	57.0	27.6	32.38	62.4	27.5	40.56	11.1
28.8	62.11	56.1	28.7	18.47	57.1	28.6	32.78	62.7	28.5	40.68	11.4
29.7	62.68	56.1	29.7	19.05	57.2	29.6	33.15	63.0	29.5	40.76	11.8
30.7	63.27	56.0	30.7	19.62	57.3	30.6	33.49	63.3	30.5	40.82	12.1
31.7	63.87	56.0	31.7	20.17	57.5	31.6	33.81	63.6	31.5	40.89	12.4
32.7	64.48	55.9	32.7	20.69	57.6	32.6	34.11	63.8	32.5	40.97	12.7

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 12	° ′ 86 36		h m 18 12	° ′ 86 36		h m 18 12	° ′ 86 35		h m 18 13	° ′ 86 35
	s	″		s	″		s	″		s	″
1.0	39.68	17.2	1.9	42.69	6.7	1.8	50.38	60.7	1.7	1.31	59.4
2.0	39.63	16.8	2.9	42.92	6.4	2.8	50.74	60.5	2.7	1.68	59.5
3.0	39.59	16.4	3.9	43.16	6.1	3.8	51.11	60.4	3.7	2.03	59.6
4.0	39.57	16.1	4.9	43.42	5.8	4.8	51.48	60.3	4.7	2.36	59.7
5.0	39.57	15.7	5.9	43.68	5.6	5.8	51.84	60.2	5.7	2.68	59.9
6.0	39.59	15.3	6.9	43.94	5.3	6.8	52.20	60.1	6.7	2.98	60.0
7.0	39.64	14.9	7.9	44.19	5.1	7.8	52.55	60.1	7.7	3.28	60.1
8.0	39.70	14.6	8.9	44.42	4.9	8.8	52.88	60.0	8.7	3.59	60.1
9.0	39.78	14.2	9.9	44.65	4.7	9.8	53.19	59.9	9.7	3.90	60.2
10.0	39.86	13.9	10.9	44.87	4.5	10.8	53.50	59.9	10.7	4.22	60.3
10.9	39.93	13.6	11.9	45.09	4.3	11.8	53.82	59.8	11.7	4.56	60.3
11.9	40.00	13.3	12.9	45.32	4.0	12.8	54.14	59.7	12.7	4.91	60.4
12.9	40.05	13.0	13.9	45.56	3.7	13.8	54.48	59.6	13.7	5.27	60.5
13.9	40.11	12.7	14.9	45.82	3.5	14.8	54.83	59.5	14.7	5.61	60.7
14.9	40.16	12.4	15.9	46.11	3.2	15.8	55.19	59.4	15.7	5.95	60.8
15.9	40.21	12.1	16.9	46.40	3.0	16.8	55.57	59.3	16.7	6.29	61.0
16.9	40.28	11.7	17.8	46.71	2.7	17.8	55.96	59.3	17.7	6.61	61.2
17.9	40.36	11.3	18.8	47.04	2.5	18.8	56.35	59.2	18.7	6.90	61.4
18.9	40.46	11.0	19.8	47.37	2.4	19.8	56.73	59.2	19.7	7.17	61.6
19.9	40.59	10.6	20.8	47.68	2.2	20.8	57.11	59.2	20.7	7.43	61.8
20.9	40.74	10.3	21.8	47.99	2.0	21.8	57.46	59.3	21.7	7.69	61.9
21.9	40.90	10.0	22.8	48.29	1.9	22.8	57.79	59.3	22.7	7.95	62.1
22.9	41.08	9.6	23.8	48.58	1.8	23.8	58.12	59.3	23.7	8.22	62.2
23.9	41.25	9.3	24.8	48.86	1.6	24.8	58.44	59.3	24.7	8.50	62.3
24.9	41.42	9.1	25.8	49.14	1.4	25.7	58.76	59.3	25.7	8.79	62.5
25.9	41.58	8.8	26.8	49.42	1.3	26.7	59.08	59.3	26.7	9.09	62.7
26.9	41.73	8.5	27.8	49.72	1.1	27.7	59.43	59.3	27.7	9.39	62.9
27.9	41.87	8.3	28.8	50.04	0.9	28.7	59.79	59.3	28.7	9.69	63.1
28.9	42.01	8.0	29.8	50.38	0.7	29.7	60.15	59.3	29.7	9.98	63.3
29.9	42.16	7.7	30.8	50.74	0.5	30.7	60.53	59.3	30.7	10.26	63.5
30.9	42.32	7.4	31.8	51.11	0.4	31.7	60.92	59.4	31.6	10.51	63.8
31.9	42.49	7.0	32.8	51.48	0.3	32.7	61.31	59.4	32.6	10.74	64.1

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
	18 13	86 36		18 13	86 36		18 13	86 36		18 12	86 36
	s	″		s	″		s	″		s	″
1.6	10.51	3.8	1.6	15.46	12.2	1.5	14.65	21.6	1.4	68.25	30.2
2.6	10.74	4.1	2.6	15.50	12.5	2.5	14.53	21.9	2.4	67.99	30.5
3.6	10.95	4.3	3.6	15.54	12.8	3.5	14.42	22.2	3.4	67.72	30.7
4.6	11.15	4.5	4.6	15.59	13.1	4.5	14.32	22.5	4.4	67.44	31.0
5.6	11.34	4.8	5.6	15.65	13.3	5.5	14.22	22.8	5.4	67.14	31.3
6.6	11.54	5.0	6.6	15.72	13.6	6.5	14.10	23.1	6.4	66.81	31.5
7.6	11.75	5.2	7.6	15.79	13.9	7.5	13.97	23.4	7.4	66.46	31.8
8.6	11.96	5.4	8.5	15.86	14.2	8.5	13.82	23.7	8.4	66.10	32.0
9.6	12.18	5.6	9.5	15.91	14.6	9.5	13.64	24.1	9.4	65.74	32.2
10.6	12.41	5.8	10.5	15.94	14.9	10.5	13.44	24.4	10.4	65.39	32.4
11.6	12.65	6.1	11.5	15.95	15.3	11.5	13.23	24.7	11.4	65.05	32.6
12.6	12.88	6.4	12.5	15.94	15.6	12.5	13.02	25.0	12.4	64.72	32.7
13.6	13.10	6.6	13.5	15.91	16.0	13.5	12.80	25.3	13.4	64.40	32.9
14.6	13.29	6.9	14.5	15.86	16.3	14.4	12.59	25.6	14.4	64.08	33.1
15.6	13.46	7.2	15.5	15.81	16.6	15.4	12.38	25.8	15.4	63.76	33.3
16.6	13.61	7.5	16.5	15.76	16.9	16.4	12.18	26.1	16.4	63.44	33.5
17.6	13.74	7.8	17.5	15.72	17.2	17.4	11.99	26.3	17.4	63.11	33.7
18.6	13.87	8.1	18.5	15.68	17.5	18.4	11.81	26.6	18.4	62.76	33.9
19.6	13.99	8.4	19.5	15.66	17.8	19.4	11.63	26.9	19.3	62.38	34.2
20.6	14.11	8.6	20.5	15.64	18.1	20.4	11.44	27.2	20.3	61.99	34.3
21.6	14.24	8.9	21.5	15.62	18.4	21.4	11.22	27.5	21.3	61.59	34.5
22.6	14.39	9.1	22.5	15.60	18.7	22.4	10.98	27.8	22.3	61.19	34.7
23.6	14.54	9.4	23.5	15.56	19.0	23.4	10.72	28.1	23.3	60.78	34.8
24.6	14.69	9.7	24.5	15.50	19.4	24.4	10.44	28.4	24.3	60.38	34.9
25.6	14.84	10.0	25.5	15.42	19.8	25.4	10.16	28.7	25.3	59.99	35.0
26.6	14.99	10.3	26.5	15.31	20.1	26.4	9.87	28.9	26.3	59.61	35.1
27.6	15.12	10.6	27.5	15.19	20.4	27.4	9.58	29.1	27.3	59.24	35.3
28.6	15.23	10.9	28.5	15.06	20.7	28.4	9.30	29.3	28.3	58.88	35.4
29.6	15.31	11.3	29.5	14.92	21.1	29.4	9.03	29.6	29.3	58.52	35.5
30.6	15.37	11.6	30.5	14.78	21.3	30.4	8.77	29.8	30.3	58.15	35.7
31.6	15.42	11.9	31.5	14.65	21.6	31.4	8.51	30.0	31.3	57.77	35.8
32.6	15.46	12.2	32.5	14.53	21.9	32.4	8.25	30.2	32.3	57.38	36.0

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 12	° ′ 86 36		h m 18 12	° ′ 86 36		h m 18 12	° ′ 86 36		h m 18 12	° ′ 86 36
	s	″		s	″		s	″		s	″
1.3	57.38	36.0	1.2	44.54	37.5	1.1	31.60	34.3	1.1	22.26	26.9
2.3	56.97	36.2	2.2	44.08	37.5	2.1	31.22	34.1	2.1	22.07	26.6
3.3	56.54	36.3	3.2	43.62	37.4	3.1	30.86	33.8	3.1	21.88	26.3
4.3	56.10	36.4	4.2	43.16	37.4	4.1	30.52	33.6	4.1	21.69	26.0
5.3	55.65	36.5	5.2	42.72	37.3	5.1	30.19	33.4	5.1	21.49	25.8
6.3	55.21	36.6	6.2	42.29	37.2	6.1	29.87	33.2	6.1	21.29	25.5
7.3	54.78	36.7	7.2	41.88	37.1	7.1	29.54	33.0	7.0	21.08	25.2
8.3	54.36	36.7	8.2	41.48	37.0	8.1	29.19	32.9	8.0	20.86	24.9
9.3	53.95	36.8	9.2	41.09	37.0	9.1	28.83	32.7	9.0	20.64	24.6
10.3	53.55	36.8	10.2	40.69	36.9	10.1	28.47	32.5	10.0	20.42	24.3
11.3	53.16	36.9	11.2	40.28	36.9	11.1	28.10	32.3	11.0	20.22	24.0
12.3	52.78	36.9	12.2	39.86	36.8	12.1	27.73	32.1	12.0	20.04	23.6
13.3	52.39	37.0	13.2	39.43	36.8	13.1	27.37	31.9	13.0	19.88	23.2
14.3	51.98	37.1	14.2	38.99	36.8	14.1	27.02	31.6	14.0	19.75	22.9
15.3	51.55	37.2	15.2	38.53	36.7	15.1	26.68	31.3	15.0	19.63	22.5
16.3	51.11	37.3	16.2	38.08	36.6	16.1	26.36	31.0	16.0	19.52	22.2
17.3	50.64	37.4	17.2	37.63	36.4	17.1	26.07	30.8	17.0	19.42	21.8
18.3	50.18	37.4	18.2	37.19	36.3	18.1	25.80	30.5	18.0	19.32	21.5
19.3	49.72	37.5	19.2	36.76	36.2	19.1	25.53	30.2	19.0	19.22	21.2
20.3	49.26	37.5	20.2	36.35	36.0	20.1	25.26	30.0	20.0	19.12	20.9
21.3	48.81	37.4	21.2	35.97	35.8	21.1	24.99	29.8	21.0	19.00	20.6
22.3	48.37	37.4	22.2	35.61	35.7	22.1	24.71	29.5	22.0	18.87	20.3
23.3	47.95	37.4	23.2	35.24	35.6	23.1	24.42	29.3	23.0	18.75	20.0
24.3	47.55	37.4	24.2	34.86	35.4	24.1	24.12	29.1	24.0	18.64	19.6
25.2	47.15	37.4	25.2	34.48	35.3	25.1	23.82	28.8	25.0	18.54	19.3
26.2	46.75	37.4	26.2	34.08	35.2	26.1	23.52	28.5	26.0	18.46	18.9
27.2	46.34	37.5	27.2	33.67	35.1	27.1	23.23	28.2	27.0	18.41	18.5
28.2	45.91	37.5	28.2	33.25	35.0	28.1	22.95	27.9	28.0	18.38	18.1
29.2	45.46	37.5	29.2	32.83	34.8	29.1	22.70	27.6	29.0	18.37	17.7
30.2	45.00	37.5	30.2	32.41	34.7	30.1	22.47	27.3	30.0	18.37	17.4
31.2	44.54	37.5	31.2	32.00	34.5	31.1	22.26	26.9	31.0	18.38	17.1
32.2	44.08	37.5	32.2	31.60	34.3	32.1	22.07	26.6	32.0	18.38	16.8

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 19 49	° ′ 88 55		h m 19 49	° ′ 88 55		h m 19 49	° ′ 88 55		h m 19 49	° ′ 88 55
	s	″		s	″		s	″		s	″
1.1	11.37	40.2	1.0	4.45	30.1	1.9	17.73	21.6	1.8	46.96	16.6
2.1	10.70	39.9	2.0	4.55	29.8	2.9	18.52	21.4	2.8	48.15	16.5
3.1	10.05	39.6	3.0	4.74	29.4	3.9	19.37	21.1	3.8	49.31	16.5
4.1	9.43	39.2	4.0	5.01	29.0	4.9	20.26	20.9	4.8	50.42	16.5
5.0	8.86	38.9	5.0	5.34	28.7	5.9	21.18	20.6	5.8	51.47	16.5
6.0	8.36	38.5	6.0	5.72	28.4	6.9	22.09	20.5	6.8	52.47	16.5
7.0	7.94	38.2	7.0	6.11	28.1	7.9	22.98	20.3	7.8	53.44	16.4
8.0	7.60	37.8	8.0	6.50	27.8	8.9	23.83	20.1	8.8	54.39	16.4
9.0	7.33	37.5	8.9	6.87	27.5	9.9	24.63	19.9	9.8	55.35	16.4
10.0	7.09	37.2	9.9	7.20	27.2	10.9	25.41	19.8	10.8	56.36	16.3
11.0	6.85	36.9	10.9	7.49	27.0	11.9	26.17	19.6	11.8	57.43	16.3
12.0	6.60	36.6	11.9	7.77	26.7	12.9	26.93	19.4	12.8	58.55	16.2
13.0	6.31	36.3	12.9	8.05	26.4	13.9	27.72	19.2	13.8	59.72	16.2
14.0	5.99	36.0	13.9	8.36	26.1	14.9	28.57	18.9	14.8	60.91	16.2
15.0	5.65	35.7	14.9	8.72	25.7	15.9	29.49	18.7	15.8	62.11	16.2
16.0	5.30	35.4	15.9	9.15	25.4	16.9	30.49	18.5	16.8	63.30	16.2
17.0	4.97	35.1	16.9	9.66	25.1	17.8	31.55	18.3	17.8	64.45	16.3
18.0	4.65	34.7	17.9	10.24	24.7	18.8	32.63	18.2	18.8	65.54	16.4
19.0	4.42	34.4	18.9	10.88	24.4	19.8	33.72	18.0	19.8	66.58	16.4
20.0	4.27	34.0	19.9	11.56	24.2	20.8	34.80	17.9	20.8	67.56	16.5
21.0	4.19	33.6	20.9	12.24	23.9	21.8	35.84	17.8	21.7	68.50	16.6
22.0	4.20	33.3	21.9	12.91	23.7	22.8	36.83	17.7	22.7	69.43	16.6
23.0	4.24	32.9	22.9	13.54	23.4	23.8	37.77	17.6	23.7	70.38	16.6
24.0	4.31	32.6	23.9	14.14	23.2	24.8	38.68	17.5	24.7	71.37	16.7
25.0	4.39	32.3	24.9	14.70	23.0	25.8	39.58	17.4	25.7	72.40	16.7
26.0	4.46	32.0	25.9	15.25	22.7	26.8	40.48	17.3	26.7	73.49	16.7
27.0	4.49	31.7	26.9	15.80	22.5	27.8	41.42	17.2	27.7	74.62	16.8
28.0	4.48	31.4	27.9	16.38	22.2	28.8	42.42	17.0	28.7	75.78	16.9
29.0	4.45	31.1	28.9	17.02	21.9	29.8	43.48	16.9	29.7	76.93	17.0
30.0	4.42	30.8	29.9	17.73	21.6	30.8	44.60	16.8	30.7	78.05	17.1
31.0	4.41	30.5	30.9	18.52	21.4	31.8	45.77	16.7	31.7	79.12	17.3
32.0	4.45	30.1	31.9	19.37	21.1	32.8	46.96	16.6	32.7	80.12	17.4

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 19 50	° ′ 88 55		h m 19 50	° ′ 88 55		h m 19 50	° ′ 88 55		h m 19 50	° ′ 88 55
	s	″		s	″		s	″		s	″
1.7	19.12	17.3	1.6	44.73	23.1	1.6	55.14	32.0	1.5	48.40	42.2
2.7	20.12	17.4	2.6	45.20	23.4	2.6	55.17	32.3	2.5	48.00	42.5
3.7	21.06	17.6	3.6	45.69	23.6	3.6	55.24	32.6	3.5	47.59	42.8
4.7	21.94	17.7	4.6	46.20	23.9	4.6	55.34	32.9	4.5	47.14	43.2
5.7	22.79	17.8	5.6	46.75	24.1	5.5	55.46	33.2	5.5	46.61	43.5
6.7	23.63	17.9	6.6	47.34	24.3	6.5	55.57	33.5	6.5	46.01	43.9
7.7	24.49	18.0	7.6	47.95	24.5	7.5	55.65	33.9	7.5	45.34	44.3
8.7	25.38	18.2	8.6	48.57	24.8	8.5	55.67	34.2	8.5	44.61	44.6
9.7	26.33	18.3	9.6	49.19	25.1	9.5	55.63	34.6	9.4	43.84	44.9
10.7	27.33	18.4	10.6	49.79	25.4	10.5	55.52	35.0	10.4	43.05	45.2
11.7	28.35	18.5	11.6	50.31	25.7	11.5	55.33	35.3	11.4	42.28	45.5
12.7	29.38	18.7	12.6	50.75	26.1	12.5	55.08	35.7	12.4	41.55	45.9
13.7	30.39	18.9	13.6	51.12	26.4	13.5	54.82	36.0	13.4	40.86	46.0
14.7	31.36	19.1	14.6	51.43	26.7	14.5	54.54	36.3	14.4	40.20	46.3
15.7	32.27	19.3	15.6	51.69	27.0	15.5	54.28	36.6	15.4	39.56	46.6
16.7	33.11	19.5	16.6	51.94	27.3	16.5	54.06	36.9	16.4	38.93	46.9
17.7	33.89	19.8	17.6	52.19	27.6	17.5	53.88	37.2	17.4	38.27	47.2
18.7	34.61	20.0	18.6	52.46	27.8	18.5	53.73	37.5	18.4	37.56	47.5
19.7	35.31	20.2	19.6	52.79	28.1	19.5	53.59	37.8	19.4	36.79	47.9
20.7	36.00	20.3	20.6	53.15	28.4	20.5	53.43	38.2	20.4	35.94	48.2
21.7	36.71	20.5	21.6	53.53	28.7	21.5	53.24	38.5	21.4	35.03	48.5
22.7	37.45	20.7	22.6	53.92	29.0	22.5	52.99	38.9	22.4	34.06	48.8
23.7	38.24	20.9	23.6	54.29	29.3	23.5	52.66	39.3	23.4	33.06	49.1
24.7	39.06	21.1	24.6	54.61	29.7	24.5	52.26	39.7	24.4	32.06	49.4
25.7	39.91	21.3	25.6	54.86	30.0	25.5	51.80	40.0	25.4	31.08	49.6
26.7	40.76	21.5	26.6	55.03	30.4	26.5	51.29	40.4	26.4	30.14	49.8
27.7	41.58	21.8	27.6	55.13	30.7	27.5	50.75	40.7	27.4	29.24	50.1
28.7	42.35	22.0	28.6	55.17	31.1	28.5	50.21	41.0	28.4	28.37	50.3
29.6	43.04	22.3	29.6	55.16	31.4	29.5	49.70	41.3	29.4	27.53	50.6
30.6	43.67	22.6	30.6	55.15	31.7	30.5	49.23	41.6	30.4	26.69	50.9
31.6	44.23	22.9	31.6	55.14	32.0	31.5	48.81	41.9	31.4	25.81	51.1
32.6	44.73	23.1	32.6	55.17	32.3	32.5	48.40	42.2	32.4	24.88	51.4

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
	19 49	88 55		19 49	88 55		19 48	88 55		19 48	88 55
	s	″		s	″		s	″		s	″
1.4	84.88	51.4	1.3	49.52	57.5	1.2	66.87	59.4	1.1	28.76	56.3
2.4	83.89	51.7	2.3	48.10	57.7	2.2	65.45	59.4	2.1	27.75	56.1
3.4	82.83	52.0	3.3	46.66	57.8	3.2	64.10	59.3	3.1	26.77	55.9
4.4	81.70	52.3	4.3	45.22	57.9	4.2	62.81	59.2	4.1	25.80	55.7
5.4	80.53	52.5	5.3	43.81	58.0	5.2	61.56	59.2	5.1	24.84	55.6
6.4	79.33	52.8	6.3	42.44	58.1	6.2	60.33	59.1	6.1	23.85	55.4
7.4	78.14	53.0	7.3	41.13	58.2	7.2	59.10	59.1	7.1	22.81	55.2
8.4	76.99	53.2	8.3	39.86	58.3	8.2	57.86	59.1	8.1	21.74	55.0
9.4	75.88	53.4	9.3	38.63	58.3	9.2	56.57	59.0	9.1	20.64	54.9
10.4	74.81	53.6	10.3	37.40	58.4	10.2	55.23	59.0	10.1	19.52	54.7
11.4	73.78	53.8	11.3	36.15	58.6	11.2	53.84	59.0	11.1	18.41	54.4
12.4	72.77	54.0	12.3	34.87	58.7	12.2	52.41	58.9	12.1	17.35	54.2
13.4	71.75	54.2	13.3	33.53	58.8	13.2	50.98	58.8	13.1	16.35	53.9
14.3	70.69	54.5	14.3	32.14	58.9	14.2	49.56	58.7	14.1	15.42	53.6
15.3	69.58	54.7	15.3	30.67	59.0	15.2	48.17	58.6	15.1	14.56	53.3
16.3	68.40	54.9	16.3	29.18	59.1	16.2	46.85	58.5	16.1	13.77	53.1
17.3	67.15	55.2	17.3	27.67	59.1	17.2	45.59	58.3	17.1	13.01	52.8
18.3	65.85	55.4	18.3	26.18	59.2	18.2	44.40	58.2	18.1	12.28	52.6
19.3	64.51	55.6	19.3	24.73	59.2	19.2	43.25	58.1	19.1	11.55	52.4
20.3	63.17	55.8	20.3	23.34	59.2	20.2	42.13	57.9	20.1	10.78	52.1
21.3	61.84	55.9	21.2	22.01	59.2	21.2	41.00	57.8	21.1	9.98	51.9
22.3	60.55	56.1	22.2	20.72	59.2	22.2	39.84	57.8	22.1	9.14	51.7
23.3	59.31	56.2	23.2	19.45	59.2	23.2	38.64	57.6	23.1	8.28	51.4
24.3	58.12	56.3	24.2	18.19	59.3	24.2	37.40	57.5	24.1	7.41	51.2
25.3	56.97	56.5	25.2	16.92	59.3	25.2	36.13	57.4	25.1	6.55	50.9
26.3	55.83	56.6	26.2	15.61	59.4	26.2	34.83	57.3	26.1	5.76	50.6
27.3	54.67	56.8	27.2	14.24	59.4	27.2	33.52	57.1	27.1	5.04	50.2
28.3	53.47	57.0	28.2	12.81	59.5	28.1	32.23	56.9	28.1	4.39	49.9
29.3	52.22	57.2	29.2	11.34	59.5	29.1	31.01	56.7	29.1	3.83	49.6
30.3	50.90	57.4	30.2	9.84	59.5	30.1	29.85	56.5	30.1	3.32	49.3
31.3	49.52	57.5	31.2	8.34	59.5	31.1	28.76	56.3	31.1	2.85	49.0
32.3	48.10	57.7	32.2	6.87	59.4	32.1	27.75	56.1	32.1	2.40	48.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.		γ Pegasi. (*Algenib.*)		*β Hydri.		α Cassiopeæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 0 1	° ′ 28 23	h m 0 6	° ′ 14 28	h m 0 19	° ′ 77 57	h m 0 33	° ′ 55 50
	s	″	s	″	s	″	s	″
Jan. 0.2	51.51 −.14	45.8 −0.8	43.98 −.11	59.0 −0.7	6.51 −.90	77.4 −0.9	20.75 −.29	58.0 −0.2
10.2	51.38 .13	44.9 1.0	43.88 .11	58.2 0.8	5.63 .85	76.2 1.5	20.47 .28	57.5 0.7
20.2	51.25 .12	43.7 1.3	43.77 .10	57.3 0.9	4.81 .78	74.5 2.0	20.19 .27	56.6 1.1
30.2	51.14 .10	42.4 1.4	43.68 .08	56.4 1.0	4.08 .68	72.2 2.5	19.93 .25	55.3 1.6
Feb. 9.1	51.05 .08	40.9 1.5	43.61 .07	55.4 1.0	3.45 .57	69.5 3.0	19.69 .22	53.5 1.9
19.1	50.98 .05	39.3 1.6	43.55 .04	54.4 0.9	2.94 .44	66.3 3.3	19.49 .18	51.4 2.2
Mar. 1.1	50.95 −.02	37.7 1.5	43.52 −.01	53.6 0.8	2.57 .30	62.8 3.6	19.34 .12	49.0 2.4
11.0	50.95 +.02	36.2 1.4	43.53 +.02	52.8 0.7	2.35 −.14	59.2 3.8	19.25 −.06	46.6 2.5
21.0	50.99 .07	34.9 1.2	43.57 .06	52.2 0.5	2.29 +.02	55.3 3.9	19.22 +.01	44.1 2.5
31.0	51.08 .11	33.8 1.1	43.65 .10	51.9 −0.2	2.37 .17	51.4 3.9	19.27 .09	41.7 2.3
Apr. 10.0	51.21 .16	32.9 0.7	43.78 .14	51.9 +0.1	2.62 .33	47.5 3.8	19.40 .16	39.5 2.1
19.9	51.39 .20	32.5 −0.3	43.94 .18	52.2 0.4	3.03 .48	43.8 3.7	19.59 .23	37.5 1.7
29.9	51.62 .24	32.3 +0.1	44.14 .22	52.7 0.7	3.58 .63	40.2 3.5	19.86 .30	36.0 1.4
May 9.9	51.88 .28	32.6 0.5	44.39 .26	53.7 1.1	4.28 .76	36.8 3.2	20.20 .36	34.8 0.9
19.9	52.18 .31	33.3 0.9	44.66 .29	54.9 1.3	5.11 .88	33.8 2.8	20.58 .41	34.1 −0.4
29.8	52.50 .33	34.3 1.2	44.96 .31	56.3 1.6	6.04 .98	31.2 2.4	21.01 .45	33.9 +0.1
June 8.8	52.84 .35	35.7 1.6	45.28 .32	58.0 1.8	7.06 1.06	29.0 1.9	21.48 .47	34.2 0.5
18.8	53.20 .35	37.4 1.9	45.60 .33	60.0 2.0	8.16 1.11	27.3 1.4	21.96 .49	35.0 1.0
28.7	53.55 .35	39.4 2.1	45.93 .33	62.1 2.1	9.28 1.14	26.2 0.9	22.45 .49	36.3 1.5
July 8.7	53.88 .33	41.7 2.3	46.26 .32	64.2 2.2	10.42 1.13	25.6 −0.3	22.93 .48	38.0 1.9
18.7	54.21 .31	44.1 2.5	46.56 .30	66.5 2.2	11.53 1.09	25.6 +0.3	23.40 .45	40.1 2.3
28.7	54.51 .28	46.6 2.6	46.85 .27	68.7 2.2	12.60 1.03	26.1 0.8	23.83 .42	42.6 2.6
Aug. 7.6	54.77 .25	49.2 2.6	47.11 .24	70.8 2.1	13.58 .93	27.3 1.4	24.23 .38	45.3 2.9
17.6	55.00 .21	51.7 2.5	47.33 .21	72.9 2.0	14.44 .80	28.9 1.9	24.58 .33	48.3 3.1
27.6	55.19 .17	54.2 2.5	47.52 .17	74.8 1.8	15.17 .65	31.0 2.3	24.88 .27	51.5 3.2
Sept. 6.6	55.35 .13	56.6 2.4	47.68 .13	76.5 1.6	15.73 .48	33.4 2.6	25.13 .22	54.8 3.3
16.5	55.46 .09	58.9 2.2	47.79 .09	78.1 1.4	16.12 .29	36.2 2.9	25.32 .16	58.1 3.3
26.5	55.53 .05	61.0 2.0	47.86 .06	79.4 1.2	16.32 +.10	39.2 3.0	25.46 .11	61.4 3.2
Oct. 6.5	55.56 +.02	62.9 1.8	47.91 +.03	80.5 1.0	16.32 −.09	42.2 3.0	25.53 +.05	64.6 3.1
16.4	55.56 −.02	64.6 1.5	47.92 .00	81.4 0.8	16.13 .28	45.1 2.9	25.56 .00	67.6 2.9
26.4	55.53 .05	66.0 1.3	47.90 −.03	82.0 0.5	15.77 .45	47.9 2.7	25.53 −.06	70.5 2.7
Nov. 5.4	55.47 .07	67.1 1.0	47.85 .05	82.4 0.3	15.24 .60	50.4 2.3	25.45 .10	73.0 2.4
15.4	55.39 .09	67.9 0.7	47.79 .07	82.6 +0.1	14.57 .73	52.5 1.9	25.32 .15	75.3 2.0
25.3	55.29 .11	68.4 +0.3	47.71 .09	82.6 −0.1	13.78 .83	54.2 1.4	25.15 .19	77.1 1.6
Dec. 5.3	55.17 .12	68.6 0.0	47.61 .10	82.4 0.3	12.92 .89	55.2 0.8	24.94 .22	78.5 1.2
15.3	55.05 .13	68.5 −0.3	47.51 .10	82.0 0.5	12.01 .92	55.7 +0.1	24.71 .25	79.5 0.7
25.3	54.92 .13	68.1 0.6	47.40 .11	81.5 0.6	11.08 .92	55.5 −0.5	24.45 .27	79.9 +0.2
35.2	54.79 −.13	67.4 −0.9	47.30 −.11	80.8 −0.8	10.18 −.88	54.7 −1.1	24.18 −.26	79.8 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ceti.		*21 Cassiopeæ.		ε Piscium.		θ^1 Ceti.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 0 37	° ′ 18 40	h m 0 37	° ′ 74 17	h m 0 56	° ′ 7 12	h m 1 17	° ′ 8 49
	s	″	s	″	s	″	s	″
Jan. 0.3	15.28 −.11	53.5 +0.5	19.36 −.70	70.1 +0.2	23.70 −.10	39.4 −0.6	43.18 −.10	68.2 +0.7
10.2	15.17 .12	53.9 +0.3	18.66 .71	70.0 −0.4	23.59 .11	38.8 0.6	43.07 .11	68.8 0.5
20.2	15.05 .11	54.1 0.0	17.96 .69	69.4 0.9	23.48 .11	38.2 0.6	42.96 .12	69.3 0.4
30.2	14.95 .10	54.0 −0.3	17.29 .64	68.2 1.5	23.37 .11	37.5 0.6	42.84 .12	69.6 +0.2
Feb. 9.2	14.85 .09	53.6 0.5	16.68 .57	66.4 2.0	23.27 .10	36.9 0.5	42.73 .11	69.7 0.0
19.1	14.78 .07	52.9 0.8	16.16 .47	64.2 2.4	23.18 .08	36.4 0.5	42.63 .09	69.5 −0.2
Mar. 1.1	14.72 .04	52.0 1.1	15.76 .34	61.7 2.7	23.11 .05	36.0 0.3	42.54 .07	69.2 0.5
11.1	14.69 −.01	50.8 1.3	15.48 .21	58.9 2.9	23.08 −.02	35.8 −0.2	42 48 .05	68.6 0.7
21.1	14.71 +.03	49.4 1.6	15.35 −.06	56.0 2.9	23.07 +.01	35.7 0.0	42.45 −.01	67.7 1.0
31.0	14.76 .07	47.7 1.8	15.37 +.10	53.1 2.9	23.10 .05	35.8 +0.2	42.46 +.03	66.7 1.2
Apr. 10.0	14.85 .11	45.8 2.0	15.54 .25	50.3 2.7	23.17 .09	36.2 0.5	42.51 .07	65.4 1.4
20.0	14.98 .15	43.7 2.2	15.87 .39	47.7 2.4	23.29 .14	36.8 0.7	42.60 .11	63.8 1.6
29.9	15.15 .19	41.4 2.3	16.33 .53	45.5 2.1	23.44 .18	37.7 1.0	42.73 .15	62.1 1.8
May 9.9	15.36 .23	39.0 2.4	16.92 .64	43.6 1.6	23.64 .22	38.8 1.3	42.90 .19	60.2 2.0
19.9	15.62 .27	36.6 2.4	17.61 .74	42.3 1.1	23.88 .25	40.2 1.5	43.12 .24	58.1 2.1
29.9	15.89 .29	34.2 2.4	18.39 .82	41.4 −0.6	24.15 .28	41.8 1.7	43.37 .26	55.9 2.2
June 8.8	16.20 .32	31.8 2.4	19.23 .87	41.1 0.0	24.44 .30	43.6 1.8	43.65 .29	53.7 2.3
18.8	16.52 .33	29.5 2.2	20.11 .89	41.4 +0.5	24.75 .32	45.5 2.0	43.95 .31	51.4 2.2
28.8	16.86 .33	27.3 2.0	21.01 .89	42.2 1.0	25.07 .32	47.5 2.0	44.26 .32	49.2 2.1
July 8.8	17.19 .33	25.4 1.8	21.89 .87	43.4 1.6	25.40 .32	49.5 2.1	44.58 .32	47.1 2.0
18.7	17.52 .32	23.7 1.5	22.74 .83	45.3 2.1	25.72 .31	51.6 2.0	44.90 .32	45.2 1.8
28.7	17.82 .30	22.4 1.2	23.54 .77	47.5 2.5	26.02 .29	53.6 1.9	45.21 .30	43.5 1.6
Aug. 7.7	18.11 .27	21.3 0.9	24.26 .69	50.2 2.9	26.30 .27	55.4 1.8	45.51 .28	42.0 1.3
17.6	18.37 .24	20.6 0.5	24.91 .60	53.2 3.2	26.56 .25	57.1 1.6	45.78 .26	40.8 1.0
27.6	18.59 .21	20.3 −0.1	25.46 .50	56.5 3.4	26.79 .21	58.7 1.4	46.03 .23	40.0 0.7
Sept. 6.6	18.78 .17	20.3 +0.2	25.91 .39	60.0 3.6	26.99 .18	60.0 1.2	46.24 .20	39.4 0.4
16.6	18.93 .13	20.7 0.5	26.25 .28	63.7 3.7	27.15 .14	61.1 1.0	46.42 .16	39.2 −0.1
26.5	19.04 .09	21.3 0.8	26.48 .17	67.4 3.7	27.28 .11	62.0 0.7	46.57 .13	39.3 +0.2
Oct. 6.5	19.11 .05	22.2 1.0	26.58 +.05	71.1 3.7	27.37 .08	62.6 0.5	46.68 .09	39.6 0.5
16.5	19.14 +.02	23.3 1.2	26.57 −.07	74.8 3.6	27.43 .05	63.1 0.3	46.76 .06	40.2 0.7
26.5	19.14 −.01	24.5 1.3	26.45 .18	78.3 3.4	27.46 +.02	63.3 +0.1	46.80 +.03	40.9 0.8
Nov. 5.4	19.12 .04	25.8 1.3	26.21 .29	81.5 3.1	27.46 −.01	63.3 −0.1	46.82 .00	41.8 0.9
15.4	19.06 .06	27.1 1.3	25.86 .40	84.5 2.7	27.44 .03	63.2 0.2	46.81 −.02	42.8 1.0
25.4	18.99 .08	28.3 1.2	25.42 .49	87.0 2.3	27.39 .05	62.9 0.3	46.77 .05	43.8 1.0
Dec. 5.3	18.90 .10	29.4 1.1	24.89 .57	89.1 1.8	27.33 .07	62.5 0.4	46.72 .07	44.8 1.0
15.3	18.80 .11	30.4 0.9	24.28 .63	90.7 1.3	27.25 .09	62.1 0.5	46.64 .08	45.8 0.9
25.3	18.69 .11	31.2 0.7	23.62 .68	91.6 +0.7	27.16 .10	61.5 0.6	46.55 .10	46.6 0.8
35.3	18.58 −.12	31.7 +0.4	22.93 −.70	92.0 0.0	27.06 −.10	60.9 −0.6	46.45 −.11	47.4 +0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*38 Cassiopeæ.		*η* Piscium.		*α* Eridani. (*Achernar.*)		*o* Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 1 21	° ′ 69 36	h m 1 24	° ′ 14 41	h m 1 32	° ′ 57 52	h m 1 38	° ′ 8 31
	s	″	s	″	s	″	s	″
Jan. 0.3	51.80 −.48	70.6 +0.8	44.01 −.10	47.0 −0.4	61.70 −.31	56.9 +0.6	44.18 −.10	22.3 −0.5
10.2	51.30 .52	71.1 +0.2	43.90 .12	46.5 0.6	61.38 .32	57.2 0.0	44.07 .11	21.8 0.6
20.2	50.77 .52	71.0 −0.4	43.78 .12	45.9 0.6	61.06 .32	56.9 −0.6	43.96 .12	21.2 0.6
30.2	50.25 .51	70.3 1.0	43.66 .12	45.2 0.7	60.74 .31	56.0 1.1	43.83 .12	20.6 0.6
Feb. 9.2	49.76 .48	69.1 1.5	43.54 .12	44.5 0.7	60.44 .29	54.7 1.6	43.71 .12	20.1 0.5
19.1	49.31 .42	67.4 1.9	43.43 .10	43.7 0.7	60.17 .26	52.8 2.1	43.60 .11	19.6 0.5
Mar. 1.1	48.92 .34	65.3 2.3	43.34 .08	43.1 0.6	59.93 .22	50.5 2.5	43.50 .09	19.2 0.4
11.1	48.62 .25	62.8 2.5	43.27 .05	42.5 0.5	59.73 .17	47.8 2.9	43.42 .06	18.9 0.2
21.1	48.43 .14	60.2 2.7	43.23 −.02	42.0 0.4	59.58 .12	44.8 3.2	43.38 −.03	18.8 −0.1
31.0	48.34 −.02	57.5 2.7	43.23 +.02	41.7 −0.2	59.50 −.05	41.4 3.4	43.37 +.01	18.8 +0.1
Apr. 10.0	48.38 +.10	54.8 2.7	43.28 .07	41.5 0.0	59.48 +.01	37.9 3.6	43.40 .05	19.1 0.4
20.0	48.54 .22	52.2 2.5	43.37 .11	41.7 +0.3	59.53 .08	34.3 3.7	43.47 .10	19.6 0.6
29.9	48.82 .33	49.8 2.2	43.50 .16	42.1 0.5	59.64 .15	30.6 3.7	43.59 .14	20.3 0.9
May 9.9	49.20 .44	47.8 1.8	43.68 .20	42.7 0.8	59.83 .22	27.0 3.6	43.75 .18	21.3 1.1
19.9	49.69 .53	46.2 1.4	43.90 .24	43.7 1.1	60.09 .29	23.5 3.5	43.96 .22	22.5 1.3
29.9	50.26 .61	45.0 1.0	44.16 .27	44.8 1.3	60.41 .35	20.1 3.2	44.20 .26	23.9 1.5
June 8.8	50.90 .67	44.3 −0.5	44.45 .30	46.3 1.5	60.78 .40	17.0 2.9	44.47 .29	25.5 1.7
18.8	51.60 .71	44.1 +0.1	44.75 .32	47.9 1.7	61.20 .44	14.3 2.5	44.77 .31	27.3 1.8
28.8	52.32 .73	44.4 0.6	45.08 .33	49.7 1.8	61.66 .47	11.9 2.1	45.08 .32	29.1 1.9
July 8.8	53.05 .73	45.3 1.1	45.41 .33	51.6 1.9	62.14 .49	10.1 1.6	45.40 .32	31.1 2.0
18.7	53.78 .72	46.6 1.5	45.74 .32	53.6 2.0	62.63 .49	8.7 1.1	45.73 .32	33.0 1.9
28.7	54.49 .69	48.3 2.0	46.05 .31	55.5 2.0	63.12 .48	7.8 −0.5	46.04 .31	35.0 1.9
Aug. 7.7	55.16 .65	50.5 2.4	46.36 .29	57.5 1.9	63.59 .46	7.6 0.0	46.35 .30	36.8 1.8
17.6	55.78 .59	53.1 2.7	46.64 .27	59.4 1.8	64.04 .43	7.9 +0.6	46.63 .27	38.5 1.6
27.6	56.34 .52	56.0 3.0	46.89 .24	61.1 1.7	64.44 .38	8.8 1.2	46.89 .25	40.0 1.4
Sept. 6.6	56.82 .45	59.1 3.2	47.11 .21	62.8 1.5	64.79 .33	10.2 1.6	47.12 .22	41.3 1.2
16.6	57.23 .37	62.4 3.4	47.30 .17	64.2 1.4	65.09 .26	12.1 2.1	47.32 .19	42.4 1.0
26.5	57.56 .29	65.9 3.5	47.46 .14	65.5 1.2	65.32 .20	14.3 2.4	47.49 .15	43.3 0.8
Oct. 6.5	57.81 .20	69.4 3.5	47.59 .11	66.5 0.9	65.48 .13	16.9 2.7	47.62 .12	44.0 0.6
16.5	57.96 .11	72.9 3.5	47.68 .08	67.4 0.7	65.57 +.05	19.7 2.9	47.73 .09	44.5 0.4
26.5	58.02 +.02	76.4 3.4	47.74 .05	68.0 0.6	65.59 −.02	22.6 2.9	47.80 .06	44.7 +0.2
Nov. 5.4	57.99 −.07	79.7 3.2	47.77 +.02	68.5 0.4	65.54 .08	25.4 2.8	47.85 +.03	44.8 0.0
15.4	57.87 .16	82.7 2.9	47.78 −.01	68.8 +0.2	65.43 .14	28.1 2.6	47.86 .00	44.7 −0.1
25.4	57.66 .25	85.5 2.6	47.75 .03	68.9 0.0	65.26 .19	30.6 2.3	47.85 −.02	44.5 0.3
Dec. 5.3	57.38 .33	87.8 2.1	47.71 .06	68.9 −0.1	65.04 .24	32.7 1.9	47.82 .05	44.2 0.4
15.3	57.01 .39	89.7 1.6	47.64 .08	68.7 0.2	64.79 .27	34.4 1.4	47.76 .08	43.8 0.4
25.3	56.59 .45	91.1 1.1	47.56 .09	68.4 0.4	64.50 .30	35.6 0.9	47.69 .09	43.3 0.5
35.3	56.12 −.49	91.9 +0.6	47.45 −.11	67.9 −0.6	64.18 −.32	36.2 +0.3	47.59 −.10	42.8 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Arietis.		*50 Cassiopeæ.		α Arietis.		ξ^1 Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 47	° ′ 20 11	h m 1 52	° ′ 71 48	h m 2 0	° ′ 22 51	h m 2 6	° ′ 8 15
	s	″	s	″	s	″	s	″
Jan. 0.3	40.52 −.11	33.6 −0.3	42.07 −.51	52.2 +1.3	4.06 −.09	62.2 −0.1	19.12 −.09	17.6 −0.5
10.3	40.41 .12	33.2 0.4	41.53 .56	53.1 +0.6	3.95 .12	62.0 0.3	19.02 .11	17.0 0.5
20.2	40.28 .13	32.7 0.6	40.95 .59	53.5 0.0	3.82 .14	61.6 0.5	18.90 .12	16.5 0.5
30.2	40.15 .14	32.1 0.7	40.35 .60	53.2 −0.5	3.68 .14	61.0 0.6	18.78 .13	16.0 0.5
Feb. 9.2	40.01 .13	31.4 0.8	39.76 .58	52.4 1.1	3.54 .14	60.3 0.7	18.65 .13	15.5 0.5
19.2	39.88 .12	30.6 0.8	39.21 .53	51.1 1.6	3.40 .13	59.5 0.8	18.52 .12	15.1 0.4
Mar. 1.1	39.77 .10	29.7 0.8	38.71 .46	49.3 2.0	3.28 .12	58.6 0.9	18.40 .11	14.7 0.3
11.1	39.68 .08	28.9 0.8	38.30 .36	47.1 2.4	3.17 .09	57.8 0.9	18.31 .09	14.5 −0.2
21.1	39.62 −.04	28.2 0.7	38.00 .25	44.6 2.6	3.10 .05	56.9 0.8	18.24 .05	14.4 0.0
31.1	39.60 .00	27.6 0.6	37.81 −.12	42.0 2.7	3.07 −.01	56.2 0.7	18.20 −.02	14.4 +0.2
Apr. 10.0	39.62 +.04	27.2 0.3	37.76 +.01	39.3 2.7	3.08 +.03	55.6 0.5	18.20 +.03	14.7 0.4
20.0	39.69 .09	26.9 −0.1	37.84 .15	36.6 2.6	3.13 .08	55.2 0.3	18.25 .07	15.2 0.6
30.0	39.81 .14	26.9 +0.1	38.06 .28	34.1 2.5	3.24 .13	55.0 −0.1	18.34 .11	15.9 0.8
May 9.9	39.97 .19	27.2 0.4	38.41 .41	31.8 2.1	3.39 .18	55.1 +0.2	18.48 .16	16.8 1.0
19.9	40.18 .23	27.8 0.7	38.87 .52	29.8 1.8	3.59 .22	55.5 0.5	18.66 .20	17.9 1.3
29.9	40.43 .27	28.6 1.0	39.44 .62	28.3 1.3	3.83 .26	56.1 0.8	18.88 .24	19.3 1.5
June 8.9	40.71 .29	29.7 1.2	40.10 .70	27.2 0.9	4.11 .29	57.0 1.0	19.13 .27	20.8 1.6
18.8	41.01 .32	31.0 1.4	40.82 .76	26.6 −0.4	4.42 .32	58.2 1.3	19.41 .29	22.5 1.8
28.8	41.34 .33	32.5 1.6	41.60 .80	26.4 +0.1	4.75 .33	59.5 1.5	19.72 .31	24.3 1.8
July 8.8	41.67 .34	34.2 1.8	42.41 .82	26.8 0.6	5.08 .34	61.1 1.7	20.03 .32	26.2 1.9
18.8	42.01 .34	36.1 1.9	43.23 .81	27.6 1.1	5.42 .34	62.8 1.8	20.36 .32	28.1 1.9
28.7	42.34 .33	38.0 1.9	44.04 .80	29.0 1.6	5.76 .33	64.6 1.9	20.67 .31	29.9 1.8
Aug. 7.7	42.66 .31	39.9 1.9	44.82 .77	30.7 2.0	6.09 .32	66.5 1.9	20.98 .30	31.6 1.7
17.7	42.96 .29	41.8 1.9	45.56 .72	32.9 2.4	6.40 .30	68.4 1.9	21.28 .29	33.2 1.5
27.6	43.23 .26	43.6 1.8	46.25 .65	35.5 2.7	6.69 .27	70.2 1.8	21.55 .26	34.7 1.4
Sept. 6.6	43.48 .23	45.4 1.7	46.87 .58	38.3 3.0	6.95 .25	72.0 1.8	21.80 .24	36.0 1.2
16.6	43.70 .20	47.0 1.6	47.41 .50	41.4 3.2	7.18 .22	73.7 1.6	22.03 .21	37.0 0.9
26.6	43.88 .17	48.5 1.4	47.87 .42	44.7 3.4	7.38 .18	75.3 1.5	22.22 .18	37.8 0.7
Oct. 6.5	44.03 .14	49.8 1.2	48.24 .32	48.1 3.4	7.55 .15	76.7 1.3	22.38 .15	38.4 0.5
16.5	44.15 .10	51.0 1.1	48.51 .22	51.6 3.5	7.68 .12	78.0 1.2	22.51 .12	38.8 0.3
26.5	44.24 .07	51.9 0.9	48.68 .12	55.1 3.5	7.79 .09	79.1 1.0	22.62 .09	39.0 +0.1
Nov. 5.5	44.30 .04	52.7 0.7	48.75 +.01	58.5 3.3	7.86 .06	80.0 0.8	22.69 .06	39.1 −0.1
15.4	44.33 +.01	53.3 0.5	48.71 −.09	61.7 3.1	7.90 +.03	80.8 0.7	22.73 +.03	38.9 0.2
25.4	44.33 −.02	53.7 0.4	48.56 .20	64.7 2.9	7.91 .00	81.4 0.5	22.75 .00	38.7 0.3
Dec. 5.4	44.30 .04	54.0 +0.2	48.32 .30	67.4 2.5	7.89 −.03	81.8 0.3	22.73 −.03	38.3 0.4
15.3	44.24 .07	54.1 0.0	47.98 .39	69.7 2.0	7.84 .06	82.0 +0.1	22.70 .05	37.9 0.5
25.3	44.16 .09	54.0 −0.2	47.55 .46	71.5 1.5	7.77 .09	82.0 −0.1	22.63 .07	37.4 0.5
35.3	44.06 −.11	53.7 −0.3	47.05 −.53	72.8 +1.0	7.68 −.10	81.9 −0.2	22.55 −.10	36.9 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ι Cassiopeæ.		γ Ceti.		α Ceti.		*48 Cephei.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 18	° ′ 66 49	h m 2 36	° ′ 2 42	h m 2 55	° ′ 3 35	h m 3 4	° ′ 77 15
	s	″	s	″	s	″	s	″
Jan. 0.3	42.12 −.35	78.2 +1.4	46.38 −.08	13.4 −0.7	41.73 −.07	39.4 −0.7	25.40 −.57	81.6 +2.1
10.3	41.74 .40	79.3 0.8	46.29 .10	12.7 0.6	41.65 .09	38.8 0.6	24.77 .70	83.5 1.6
20.3	41.32 .44	79.9 +0.3	46.18 .12	12.1 0.5	41.54 .12	38.2 0.5	24.01 .80	84.9 1.1
30.3	40.87 .46	79.9 −0.3	46.05 .13	11.6 0.4	41.41 .13	37.7 0.4	23.18 .86	85.8 +0.5
Feb. 9.2	40.42 .45	79.4 0.8	45.92 .14	11.2 0.3	41.28 .14	37.3 0.4	22.31 .88	86.0 −0.1
19.2	39.98 .43	78.3 1.3	45.78 .14	10.9 0.2	41.13 .14	37.0 0.3	21.42 .87	85.6 0.6
Mar. 1.2	39.57 .38	76.8 1.7	45.65 .13	10.8 −0.1	40.99 .14	36.8 −0.1	20.57 .82	84.7 1.2
11.2	39.21 .32	74.9 2.1	45.53 .10	10.8 +0.1	40.87 .12	36.8 0.0	19.79 .73	83.2 1.7
21.1	38.93 .24	72.8 2.3	45.44 .08	10.9 0.2	40.76 .09	36.9 +0.2	19.11 .61	81.3 2.1
31.1	38.75 .14	70.4 2.5	45.37 .05	11.2 0.4	40.68 .06	37.2 0.4	18.58 .46	79.1 2.4
Apr. 10.1	38.66 −.03	67.9 2.5	45.34 −.01	11.8 0.6	40.63 −.02	37.7 0.6	18.20 .29	76.6 2.6
20.0	38.68 +.07	65.3 2.5	45.36 +.04	12.6 0.9	40.63 +.02	38.4 0.8	18.01 −.10	73.9 2.7
30.0	38.81 .18	62.9 2.3	45.42 .08	13.5 1.1	40.67 .06	39.2 1.0	18.00 +.09	71.1 2.7
May 10.0	39.04 .29	60.7 2.1	45.53 .13	14.7 1.3	40.76 .11	40.3 1.2	18.18 .28	68.4 2.6
20.0	39.38 .38	58.8 1.8	45.68 .17	16.1 1.5	40.90 .15	41.6 1.4	18.55 .46	65.9 2.4
29.9	39.81 .47	57.2 1.4	45.87 .21	17.7 1.6	41.07 .19	43.1 1.5	19.09 .62	63.6 2.2
June 8.9	40.32 .54	56.0 1.0	46.10 .24	19.4 1.8	41.28 .23	44.7 1.7	19.79 .77	61.6 1.8
18.9	40.90 .60	55.2 0.5	46.35 .27	21.2 1.9	41.53 .26	46.4 1.8	20.63 .90	60.0 1.4
28.9	41.52 .64	54.9 −0.1	46.64 .29	23.1 1.9	41.81 .29	48.2 1.8	21.58 1.00	58.8 1.0
July 8.8	42.18 .67	55.1 +0.4	46.94 .31	24.9 1.9	42.11 .30	50.0 1.8	22.62 1.08	58.0 −0.5
18.8	42.85 .68	55.7 0.8	47.25 .32	26.8 1.8	42.41 .31	51.8 1.8	23.73 1.13	57.7 0.0
28.8	43.53 .67	56.7 1.3	47.57 .31	28.6 1.7	42.73 .31	53.6 1.7	24.88 1.16	57.9 +0.4
Aug. 7.7	44.19 .65	58.2 1.7	47.88 .31	30.2 1.6	43.04 .31	55.2 1.5	26.04 1.16	58.6 0.9
17.7	44.83 .62	60.1 2.0	48.18 .29	31.7 1.4	43.35 .30	56.7 1.4	27.20 1.14	59.7 1.3
27.7	45.43 .58	62.3 2.4	48.47 .28	32.9 1.1	43.64 .28	57.9 1.1	28.32 1.10	61.2 1.8
Sept. 6.7	45.99 .53	64.8 2.7	48.73 .25	34.0 0.9	43.91 .26	58.9 0.9	29.39 1.04	63.2 2.2
16.6	46.49 .47	67.6 2.9	48.97 .23	34.8 0.6	44.16 .24	59.7 0.6	30.40 .96	65.5 2.5
26.6	46.93 .41	70.6 3.1	49.19 .20	35.3 0.4	44.39 .22	60.2 0.4	31.31 .87	68.2 2.8
Oct. 6.6	47.31 .34	73.8 3.2	49.38 .17	35.5 +0.1	44.60 .19	60.5 +0.1	32.13 .76	71.1 3.0
16.6	47.61 .26	77.0 3.2	49.53 .14	35.5 −0.1	44.78 .16	60.5 −0.1	32.83 .63	74.2 3.2
26.5	47.83 .18	80.2 3.2	49.66 .11	35.3 0.3	44.93 .13	60.3 0.3	33.39 .49	77.6 3.4
Nov. 5.5	47.97 .10	83.4 3.2	49.77 .09	34.9 0.5	45.05 .10	59.9 0.4	33.81 .34	81.0 3.4
15.5	48.03 +.01	86.5 3.0	49.84 .05	34.4 0.6	45.14 .07	59.4 0.6	34.07 .18	84.4 3.4
25.4	48.00 −.07	89.4 2.8	49.88 +.02	33.8 0.6	45.20 .04	58.8 0.7	34.17 +.01	87.7 3.3
Dec. 5.4	47.89 .15	92.0 2.5	49.89 .00	33.1 0.7	45.23 +.01	58.1 0.7	34.10 −.16	90.9 3.1
15.4	47.70 .23	94.3 2.1	49.87 −.03	32.4 0.7	45.22 −.02	57.4 0.7	33.86 .32	93.9 2.8
25.4	47.43 .30	96.2 1.7	49.82 .06	31.7 0.7	45.19 .05	56.7 0.7	33.46 .47	96.5 2.4
35.3	47.09 −.37	97.6 +1.2	49.75 −.09	31.0 −0.6	45.13 −.08	56.1 −0.6	32.92 −.61	98.7 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Arietis.		α Persei.		δ Persei.		η Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 7	° ′ 20 34	h m 3 15	° ′ 49 24	h m 3 33	° ′ 47 22	h m 3 39	° ′ 23 42
	s	″	s	″	s	″	s	″
Jan. 0.4	39.74 −.06	40.5 −0.1	20.20 −.11	50.8 +1.2	57.74 −.09	68.5 +1.2	59.99 −.05	56.6 +0.2
10.3	39.66 .09	40.4 0.1	20.06 .16	51.8 0.9	57.63 .14	69.6 0.9	59.93 .08	56.7 +0.1
20.3	39.55 .12	40.3 0.2	19.88 .20	52.5 0.5	57.47 .18	70.4 0.6	59.84 .11	56.7 0.0
30.3	39.42 .14	40.0 0.3	19.67 .23	52.9 +0.1	57.27 .21	70.8 +0.3	59.71 .14	56.6 −0.2
Feb. 9.3	39.27 .15	39.6 0.4	19.42 .25	52.8 −0.2	57.05 .23	70.9 −0.1	59.56 .16	56.4 0.3
19.2	39.11 .16	39.1 0.5	19.17 .25	52.4 0.6	56.81 .24	70.7 0.4	59.40 .17	56.1 0.4
Mar. 1.2	38.96 .15	38.6 0.5	18.92 .24	51.6 1.0	56.57 .24	70.1 0.8	59.23 .17	55.7 0.4
11.2	38.82 .13	38.1 0.5	18.69 .22	50.5 1.2	56.33 .22	69.2 1.0	59.07 .15	55.2 0.5
21.2	38.69 .11	37.6 0.5	18.49 .18	49.1 1.5	56.13 .19	68.0 1.3	58.92 .13	54.7 0.5
31.1	38,60 .07	37.1 0.4	18.33 .13	47.5 1.6	55.96 .14	66.6 1.4	58.81 .10	54.2 0.5
Apr. 10.1	38.55 −.03	36.7 0.4	18.23 .07	45.9 1.7	55.85 .09	65.1 1.5	58.72 .06	53.7 0.5
20.1	38.54 +.01	36.4 −0.2	18.19 −.01	44.2 1.7	55.79 −.03	63.6 1.6	58.68 −.02	53.2 0.4
30.0	38.57 .06	36.2 0.0	18.22 +.06	42.5 1.6	55.79 +.04	62.0 1.5	58.69 +.03	52.9 0.2
May 10.0	38.66 .11	36.3 +0.2	18.31 .13	40.9 1.5	55.86 .10	60.5 1.4	58.74 .08	52.7 −0.1
20.0	38.79 .16	36.6 0.4	18.48 .20	39.5 1.3	55.99 .17	59.2 1.2	58.85 .13	52.7 +0.1
30.0	38.97 .20	37.1 0.6	18.71 .26	38.3 1.0	56.19 .23	58.0 1.0	59.01 .18	52.9 0.3
June 8.9	39.20 .24	37.7 0.8	18.99 .31	37.4 0.7	56.45 .28	57.1 0.8	59.21 .22	53.3 0.5
18.9	39.46 .28	38.6 1.0	19.33 .36	36.8 0.4	56.76 .33	56.4 0.5	59.44 .26	53.8 0.6
28.9	39.75 .30	39.7 1.1	19.71 .40	36.6 −0.1	57.11 .37	56.1 −0.2	59.72 .29	54.5 0.8
July 8.9	40.06 .32	40.9 1.3	20.12 .42	36.6 +0.2	57.50 .40	56.1 +0.1	60.02 .31	55.5 1.0
18.8	40.38 .33	42.2 1.4	20.55 .44	37.0 0.6	57.91 .42	56.3 0.4	60.34 .33	56.5 1.1
28.8	40.71 .33	43.7 1.4	21.00 .45	37.7 0.8	58.34 .43	56.9 0.7	60.67 .34	57.6 1.2
Aug. 7.8	41.05 .33	45.1 1.5	21.45 .45	38.7 1.1	58.78 .44	57.7 0.9	61.01 .34	58.8 1.2
17.7	41.37 .32	46.6 1.5	21.90 .44	40.0 1.4	59.21 .43	58.8 1.2	61.34 .33	60.1 1.3
27.7	41.69 .31	48.0 1.4	22.33 .43	41.6 1.6	59.64 .42	60.0 1.4	61.67 .33	61.3 1.2
Sept. 6.7	41.99 .29	49.4 1.3	22.74 .40	43.3 1.8	60.05 .42	61.5 1.6	61.99 .31	62.5 1.2
16.7	42.27 .27	50.7 1.2	23.13 .38	45.2 2.0	60.44 .38	63.2 1.7	62.29 .29	63.7 1.1
26.6	42.52 .25	51.9 1.1	23.50 .34	47.2 2.1	60.81 .35	65.0 1.9	62.58 .27	64.8 1.1
Oct. 6.6	42.75 .22	52.9 1.0	23.82 .31	49.3 2.2	61.15 .32	66.9 2.0	62.84 .25	65.8 1.0
16.6	42.96 .19	53.8 0.8	24.11 .27	51.6 2.2	61.45 .29	68.9 2.0	63.08 .23	66.7 0.8
26.6	43.13 .16	54.6 0.7	24.36 .23	53.8 2.2	61.72 .25	70.9 2.0	63.30 .20	67.5 0.7
Nov. 5.5	43.28 .13	55.2 0.6	24.57 .18	56.0 2.2	61.95 .21	73.0 2.0	63.48 .17	68.2 0.6
15.5	43.39 .10	55.7 0.5	24.72 .13	58.2 2.2	62.13 .16	75.0 2.0	63.63 .14	68.8 0.6
25.5	43.47 .06	56.1 0.4	24.83 .08	60.3 2.0	62.27 .11	76.9 1.9	63.75 .10	69.3 0.5
Dec. 5.4	43.52 +.03	56.4 0.2	24.89 +.03	62.3 1.9	62.35 +.06	78.8 1.8	63.83 .06	69.7 0.4
15.4	43.53 −.01	56.6 +0.1	24.89 −.03	64.1 1.7	62.38 .00	80.5 1.6	63.88 +.02	70.1 0.3
25.4	43.51 .04	56.6 0.0	24.84 .08	65.6 1.4	62.36 −.05	82.0 1.4	63.88 −.01	70.3 0.2
35.4	43.45 −.07	56.6 −0.1	24.73 −.13	66.8 +1.1	62.28 −.10	83.3 +1.1	63.85 −.05	70.5 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ^1 Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	**Declination** *North.*	**Right Ascension.**	**Declination** *South.*	**Right Ascension.**	**Declination** *North.*	**Right Ascension.**	**Declination** *North.*
	h m 3 46	° ′ 31 30	h m 3 52	° ′ 13 51	h m 4 12	° ′ 15 19	h m 4 21	° ′ 18 54
	s	″	s	″	s	″	s	″
Jan. 0.4	13.11 -.04	35.8 +0.6	9.57 -.05	66.8 +1.4	37.81 -.01	23.5 -0.2	16.01 .00	3.6 0.0
10.3	13.05 .08	36.2 0.4	9.50 .08	68.1 1.2	37.78 .05	23.3 0.2	15.99 -.05	3.6 -0.1
20.3	12.95 .12	36.5 +0.2	9.40 .11	69.2 1.0	37.71 .09	23.1 0.2	15.92 .09	3.5 0.1
30.3	12.81 .15	36.7 0.0	9.28 .14	70.1 0.7	37.60 .12	22.9 0.2	15.82 .12	3.4 0.1
Feb. 9.3	12.65 .17	36.6 -0.2	9.13 .16	70.7 0.5	37.47 .14	22.6 0.2	15.69 .14	3.2 0.2
19.2	12.47 .18	36.3 0.3	8.96 .17	71.0 +0.1	37.32 .16	22.4 0.2	15.53 .16	3.0 0.2
Mar. 1.2	12.28 .18	35.9 0.5	8.79 .17	71.0 -0.2	37.16 .16	22.1 0.2	15.37 .17	2.8 0.2
11.2	12.11 .17	35.3 0.6	8.63 .16	70.7 0.5	36.99 .16	21.9 0.2	15.20 .17	2.6 0.2
21.2	11.95 .15	34.7 0.7	8.48 .14	70.1 0.8	36.84 .14	21.7 0.2	15.04 .15	2.3 0.2
31.1	11.81 .12	33.9 0.8	8.34 .12	69.2 1.0	36.71 .12	21.6 -0.1	14.90 .13	2.1 0.2
Apr. 10.1	11.72 .08	33.1 0.8	8.24 .09	68.0 1.3	36.61 .08	21.5 0.0	14.79 .09	1.9 0.2
20.1	11.66 -.03	32.3 0.8	8.18 -.05	66.6 1.5	36.54 -.05	21.5 +0.1	14.72 .05	1.8 -0.1
30.0	11.66 +.03	31.5 0.7	8.15 .00	64.9 1.8	36.52 .00	21.6 0.2	14.69 -.01	1.7 0.0
May 10.0	11.71 .08	30.9 0.6	8.17 +.04	63.0 2.0	36.54 +.04	21.9 0.3	14.70 +.04	1.7 +0.1
20.0	11.82 .13	30.4 0.4	8.24 .09	60.9 2.2	36.61 .09	22.3 0.5	14.76 .09	1.9 0.3
30.0	11.98 .18	30.1 -0.2	8.35 .13	58.7 2.3	36.72 .14	22.9 0.6	14.87 .13	2.3 0.4
June 8.9	12.18 .23	29.9 0.0	8.51 .18	56.4 2.4	36.89 .18	23.6 0.8	15.03 .18	2.7 0.6
18.9	12.43 .27	30.1 +0.2	8.70 .21	54.0 2.4	37.09 .22	24.4 0.9	15.23 .21	3.4 0.7
28.9	12.72 .30	30.4 0.4	8.93 .24	51.6 2.4	37.32 .25	25.4 1.0	15.46 .25	4.1 0.8
July 8.9	13.03 .33	30.9 0.6	9.19 .27	49.3 2.2	37.59 .28	26.5 1.1	15.73 .28	5.0 0.9
18.8	13.37 .35	31.6 0.8	9.47 .29	47.1 2.1	37.87 .30	27.7 1.2	16.01 .30	5.9 1.0
28.8	13.72 .36	32.5 0.9	9.76 .30	45.2 1.8	38.18 .31	28.9 1.2	16.32 .31	7.0 1.0
Aug. 7.8	14.08 .36	33.5 1.1	10.07 .31	43.5 1.5	38.49 .32	30.0 1.2	16.64 .32	8.0 1.0
17.7	14.43 .36	34.6 1.2	10.37 .30	42.1 1.2	38.81 .32	31.1 1.1	16.96 .32	9.0 1.0
27.7	14.79 .35	35.8 1.2	10.68 .30	41.0 0.9	39.13 .31	32.2 1.0	17.28 .32	10.0 0.9
Sept. 6.7	15.13 .34	37.0 1.3	10.97 .29	40.4 -0.4	39.44 .31	33.1 0.9	17.60 .31	10.9 0.9
16.7	15.46 .32	38.3 1.3	11.25 .27	40.1 0.0	39.74 .30	33.9 0.7	17.91 .30	11.7 0.8
26.6	15.77 .30	39.6 1.3	11.52 .25	40.3 +0.3	40.03 .28	34.6 0.6	18.21 .29	12.4 0.6
Oct. 6.6	16.06 .27	40.9 1.2	11.76 .23	40.8 0.7	40.30 .26	35.1 0.4	18.49 .27	13.0 0.5
16.6	16.32 .25	42.1 1.2	11.98 .21	41.7 1.1	40.56 .24	35.4 0.3	18.76 .26	13.4 0.4
26.6	16.55 .22	43.2 1.1	12.18 .18	42.9 1.3	40.79 .22	35.6 +0.1	19.00 .23	13.8 0.3
Nov. 5.5	16.75 .19	44.3 1.1	12.34 .15	44.4 1.5	40.99 .19	35.7 0.0	19.22 .20	14.0 0.2
15.5	16.92 .15	45.4 1.0	12.48 .12	46.0 1.7	41.17 .16	35.7 -0.1	19.41 .17	14.2 0.1
25.5	17.06 .11	46.4 1.0	12.58 .08	47.8 1.8	41.31 .13	35.6 0.1	19.57 .14	14.2 +0.1
Dec. 5.4	17.15 .07	47.3 0.9	12.65 .05	49.6 1.8	41.43 .09	35.4 0.2	19.69 .10	14.3 0.0
15.4	17.20 +.03	48.1 0.8	12.68 +.01	51.3 1.7	41.50 .05	35.2 0.2	19.78 .07	14.3 0.0
25.4	17.21 -.01	48.8 0.6	12.67 -.03	52.9 1.6	41.53 +.01	35.0 0.2	19.82 +.02	14.2 0.0
35.4	17.17 -.05	49.4 +0.5	12.63 -.06	54.4 +1.4	41.53 -.03	34.8 -0.2	19.82 -.02	14.2 -0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Tauri. (*Aldebaran.*)		*9 Camelopardalis.		*ι* Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 28	° ′ 16 15	h m 4 41	° ′ 66 7	h m 4 48	° ′ 32 57	h m 4 57	° ′ 15 13
	s	″	s	″	s	″	s	″
Jan. 0.4	41.94 +.01	21.1 −0.2	33.44 −.06	43.6 +2.4	47.92 +.02	60.6 +0.8	22.78 +.02	42.2 −0.2
10.4	41.93 −.04	21.0 0.2	33.32 .16	45.9 2.2	47.91 −.03	61.3 0.7	22.78 −.02	41.9 0.2
20.4	41.87 .08	20.8 0.2	33.11 .25	47.9 1.8	47.86 .08	61.9 0.6	22.74 .06	41.7 0.2
30.3	41.77 .11	20.6 0.2	32.82 .33	49.5 1.4	47.76 .12	62.4 0.4	22.66 .10	41.5 0.2
Feb. 9.3	41.64 .14	20.4 0.2	32.45 .40	50.7 1.0	47.62 .16	62.7 0.3	22.55 .13	41.3 0.2
19.3	41.49 .16	20.2 0.2	32.04 .44	51.5 +0.5	47.45 .18	62.9 +0.1	22.41 .15	41.2 0.1
Mar. 1.2	41.33 .17	20.0 0.2	31.59 .45	51.7 0.0	47.26 .19	62.9 −0.1	22.25 .17	41.1 0.1
11.2	41.16 .16	19.8 0.2	31.14 .45	51.5 −0.5	47.07 .19	62.7 0.3	22.08 .17	41.0 0.1
21.2	41.00 .15	19.6 0.2	30.70 .42	50.8 0.9	46.88 .18	62.3 0.4	21.91 .16	40.9 −0.1
31.2	40.86 .13	19.5 0.1	30.30 .37	49.6 1.3	46.70 .16	61.9 0.6	21.76 .14	40.8 0.0
Apr. 10.1	40.74 .10	19.4 −0.1	29.96 .30	48.1 1.7	46.56 .13	61.2 0.7	21.63 .12	40.8 0.0
20.1	40.67 .06	19.3 0.0	29.70 .22	46.3 2.0	46.45 .08	60.6 0.7	21.53 .08	40.8 +0.1
30.1	40.63 −.03	19.4 +0.1	29.53 .12	44.2 2.1	46.39 −.04	59.9 0.7	21.47 −.04	40.9 0.2
May 10.1	40.64 +.03	19.6 0.3	29.46 −.02	42.0 2.2	46.38 +.01	59.2 0.7	21.45 .00	41.2 0.3
20.0	40.69 .08	19.9 0.4	29.49 +.08	39.7 2.3	46.42 .07	58.5 0.6	21.48 +.05	41.5 0.4
30.0	40.79 .12	20.4 0.5	29.63 .19	37.5 2.2	46.51 .12	58.0 0.5	21.55 .10	42.0 0.5
June 9.0	40.94 .17	21.0 0.7	29.87 .29	35.3 2.1	46.65 .17	57.5 0.4	21.67 .14	42.6 0.6
18.9	41.13 .21	21.7 0.8	30.20 .38	33.3 1.9	46.85 .21	57.2 0.2	21.83 .18	43.3 0.7
28.9	41.35 .24	22.6 0.9	30.62 .46	31.6 1.6	47.08 .25	57.0 −0.1	22.03 .22	44.0 0.8
July 8.9	41.60 .27	23.5 1.0	31.11 .53	30.1 1.3	47.35 .29	57.0 +0.1	22.26 .25	44.9 0.9
18.9	41.88 .29	24.6 1.0	31.67 .59	28.9 1.0	47.65 .32	57.2 0.2	22.52 .27	45.8 0.9
28.8	42.18 .31	25.6 1.1	32.28 .63	28.0 0.7	47.98 .34	57.5 0.3	22.80 .29	46.8 0.9
Aug. 7.8	42.49 .32	26.7 1.0	32.92 .66	27.5 −0.3	48.32 .35	57.9 0.5	23.10 .30	47.7 0.9
17.8	42.81 .32	27.7 1.0	33.60 .68	27.4 0.0	48.68 .36	58.4 0.6	23.41 .31	48.6 0.8
27.8	43.13 .32	28.7 0.9	34.28 .69	27.6 +0.4	49.04 .36	59.0 0.6	23.72 .31	49.4 0.7
Sept. 6.7	43.44 .31	29.5 0.8	34.98 .69	28.1 0.7	49.40 .36	59.7 0.7	24.03 .31	50.1 0.6
16.7	43.75 .30	30.2 0.7	35.66 .68	29.0 1.1	49.75 .35	60.4 0.7	24.35 .31	50.6 0.5
26.7	44.05 .29	30.8 0.5	36.33 .65	30.2 1.4	50.10 .34	61.1 0.8	24.65 .30	51.0 0.3
Oct. 6.6	44.33 .28	31.3 0.4	36.97 .62	31.7 1.7	50.43 .33	61.9 0.8	24.95 .29	51.3 +0.2
16.6	44.60 .26	31.6 0.2	37.57 .58	33.6 2.0	50.75 .31	62.7 0.8	25.23 .27	51.4 0.0
26.6	44.84 .23	31.7 +0.1	38.12 .53	35.7 2.2	51.05 .29	63.5 0.8	25.49 .26	51.4 −0.1
Nov. 5.6	45.06 .21	31.8 0.0	38.62 .46	38.0 2.4	51.33 .26	64.3 0.8	25.74 .23	51.2 0.2
15.5	45.26 .18	31.7 −0.1	39.04 .39	40.4 2.6	51.57 .23	65.1 0.8	25.96 .21	51.0 0.3
25.5	45.42 .15	31.6 0.1	39.39 .30	43.0 2.7	51.78 .19	65.9 0.8	26.15 .17	50.7 0.3
Dec. 5.5	45.55 .11	31.5 0.2	39.64 .21	45.7 2.7	51.95 .15	66.7 0.8	26.31 .14	50.4 0.3
15.5	45.64 .07	31.3 0.2	39.80 .11	48.4 2.6	52.07 .10	67.6 0.8	26.43 .10	50.1 0.3
25.4	45.69 +.03	31.1 0.2	39.86 +.01	51.0 2.5	52.15 +.05	68.3 0.8	26.50 .05	49.8 0.3
35.4	45.70 −.02	30.9 −0.2	39.81 −.09	53.4 +2.3	52.18 .00	69.1 +0.7	26.53 +.01	49.5 −0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ.		β Orionis. (*Rigel.*)		β Tauri.		*Groombridge 966.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	5 7	45 52	5 8	8 20	5 18	28 29	5 22	74 57
	s	″	s	″	s	″	s	″
Jan. 0.4	23.77 +.04	11.4 +1.6	29.64 +.02	53.4 +1.6	20.26 +.05	2.8 +0.5	56.62 −.04	30.0 +2.9
10.4	23.78 −.03	12.9 1.4	29.64 −.02	54.9 1.4	20.29 .00	3.3 0.5	56.53 .17	32.8 2.7
20.4	23.72 .09	14.2 1.2	29.60 .06	56.2 1.2	20.26 −.05	3.7 0.4	56.29 .32	35.3 2.4
30.4	23.60 .14	15.3 1.0	29.51 .10	57.3 1.0	20.19 .09	4.1 0.4	55.89 .46	37.6 2.1
Feb. 9.3	23.44 .18	16.1 0.7	29.39 .13	58.1 0.7	20.08 .13	4.5 0.3	55.37 .58	39.5 1.6
19.3	23.24 .22	16.7 0.4	29.25 .16	58.7 0.5	19.93 .16	4.7 +0.2	54.74 .67	40.9 1.1
Mar. 1.3	23.01 .24	17.0 +0.1	29.08 .17	59.1 +0.2	19.76 .18	4.8 0.0	54.04 .72	41.7 +0.6
11.2	22.76 .24	16.9 −0.2	28.91 .18	59.2 0.0	19.57 .19	4.8 −0.1	53.31 .74	42.1 0.0
21.2	22.52 .23	16.6 0.5	28.73 .17	59.0 −0.3	19.39 .18	4.6 0.2	52.57 .72	41.8 −0.5
31.2	22.30 .21	16.0 0.7	28.57 .15	58.6 0.6	19.21 .17	4.4 0.3	51.87 .67	41.1 1.0
Apr. 10.2	22.11 .18	15.1 0.9	28.43 .13	57.9 0.8	19.06 .14	4.0 0.4	51.23 .59	39.8 1.5
20.1	21.95 .13	14.1 1.1	28.31 .10	57.0 1.0	18.93 .10	3.6 0.4	50.70 .48	38.2 1.9
30.1	21.85 .07	12.9 1.3	28.23 .06	55.9 1.2	18.85 .06	3.2 0.4	50.28 .35	36.2 2.2
May 10.1	21.81 −.01	11.6 1.3	28.19 −.02	54.5 1.5	18.82 −.01	2.8 0.4	50.00 .21	33.9 2.4
20.1	21.82 +.05	10.3 1.3	28.19 +.02	53.0 1.6	18.83 +.04	2.4 0.4	49.86 −.06	31.4 2.6
30.0	21.90 .10	9.0 1.3	28.24 .07	51.2 1.8	18.89 .09	2.0 0.3	49.89 +.10	28.8 2.6
June 9.0	22.04 .17	7.7 1.2	28.33 .11	49.4 1.9	19.00 .13	1.7 0.2	50.07 .25	26.2 2.6
19.0	22.24 .22	6.6 1.1	28.46 .15	47.4 2.0	19.15 .18	1.6 −0.1	50.39 .40	23.7 2.5
28.9	22.49 .27	5.6 0.9	28.62 .18	45.4 2.0	19.35 .22	1.5 0.0	50.86 .54	21.3 2.3
July 8.9	22.78 .32	4.8 0.7	28.82 .22	43.5 2.0	19.59 .25	1.5 +0.1	51.46 .66	19.1 2.1
18.9	23.12 .35	4.2 0.5	29.05 .24	41.5 1.9	19.85 .28	1.7 0.2	52.18 .77	17.1 1.8
28.9	23.49 .38	3.7 0.3	29.30 .26	39.7 1.7	20.15 .31	1.9 0.3	53.00 .86	15.5 1.5
Aug. 7.8	23.88 .40	3.5 −0.1	29.58 .28	38.1 1.5	20.46 .32	2.2 0.3	53.90 .94	14.2 1.1
17.8	24.29 .42	3.5 +0.1	29.86 .29	36.7 1.3	20.79 .34	2.6 0.4	54.87 .99	13.2 0.8
27.8	24.71 .42	3.6 0.3	30.15 .30	35.6 0.9	21.13 .34	3.0 0.4	55.88 1.03	12.6 −0.4
Sept. 6.8	25.13 .43	4.0 0.4	30.45 .30	34.8 0.6	21.47 .34	3.4 0.4	56.92 1.05	12.4 0.0
16.7	25.56 .42	4.5 0.6	30.74 .29	34.4 −0.2	21.82 .34	3.8 0.4	57.98 1.05	12.6 +0.4
26.7	25.98 .42	5.2 0.8	31.03 .29	34.3 +0.1	22.16 .34	4.2 0.4	59.04 1.05	13.3 0.8
Oct. 6.7	26.39 .40	6.0 0.9	31.32 .28	34.7 0.5	22.49 .33	4.6 0.4	60.07 1.01	14.3 1.2
16.6	26.78 .38	7.0 1.1	31.59 .26	35.4 0.9	22.81 .32	5.0 0.4	61.06 .97	15.7 1.6
26.6	27.15 .36	8.1 1.2	31.84 .25	36.4 1.1	23.12 .30	5.4 0.4	61.99 .90	17.4 1.9
Nov. 5.6	27.49 .33	9.4 1.3	32.08 .22	37.6 1.4	23.41 .28	5.8 0.4	62.84 .81	19.5 2.2
15.6	27.80 .29	10.7 1.4	32.28 .20	39.1 1.6	23.67 .25	6.1 0.4	63.59 .70	21.9 2.5
25.5	28.07 .24	12.1 1.5	32.46 .16	40.8 1.7	23.91 .21	6.5 0.4	64.23 .57	24.5 2.7
Dec. 5.5	28.29 .19	13.6 1.5	32.61 .13	42.5 1.7	24.10 .17	7.0 0.4	64.74 .43	27.4 2.9
15.5	28.45 .14	15.2 1.5	32.72 .09	44.3 1.7	24.25 .13	7.4 0.5	65.09 .27	30.3 3.0
25.5	28.56 .08	16.7 1.5	32.78 +.05	45.9 1.7	24.36 .08	7.9 0.5	65.28 +.11	33.2 2.9
35.4	28.61 +.02	18.1 +1.4	32.81 −.03	47.5 +1.5	24.42 +.03	8.3 +0.5	65.30 −.06	36.1 +2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ε Orionis.		α Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 5 25	° ′ 0 23	h m 5 27	° ′ 17 54	h m 5 29	° ′ 1 16	h m 5 35	° ′ 34 8
	s	″	s	″	s	″	s	″
Jan. 0.4	34.86 +.04	35.6 +1.2	11.28 +.02	47.8 +2.1	49.87 +.04	59.0 +1.2	6.41 .00	30.9 +2.8
10.4	34.88 .00	36.7 1.1	11.28 −.02	49.7 1.9	49.89 .00	60.2 1.1	6.39 −.05	33.6 2.5
20.4	34.86 −.05	37.7 0.9	11.23 .07	51.5 1.6	49.87 −.04	61.3 1.0	6.31 .10	35.9 2.2
30.4	34.79 .09	38.6 0.8	11.14 .11	53.0 1.4	49.81 .08	62.2 0.8	6.19 .14	37.9 1.8
Feb. 9.3	34.69 .12	39.2 0.6	11.02 .14	54.2 1.0	49.70 .12	62.9 0.6	6.03 .18	39.6 1.4
19.3	34.56 .15	39.7 0.4	10.87 .17	55.1 0.7	49.57 .14	63.4 0.4	5.84 .21	40.8 1.0
Mar. 1.3	34.40 .16	40.0 +0.2	10.69 .18	55.6 +0.4	49.42 .16	63.8 +0.2	5.62 .23	41.5 0.5
11.3	34.23 .17	40.2 0.0	10.50 .19	55.8 0.0	49.25 .17	63.9 0.0	5.38 .24	41.8 +0.1
21.2	34.06 .17	40.1 −0.1	10.31 .19	55.7 −0.3	49.08 .17	63.8 −0.1	5.14 .24	41.7 −0.4
31.2	33.90 .15	39.9 0.3	10.13 .17	55.2 0.6	48.92 .16	63.6 0.3	4.91 .22	41.1 0.8
Apr. 10.2	33.76 .13	39.5 0.5	9.97 .14	54.4 1.0	48.77 .13	63.2 0.5	4.70 .20	40.1 1.2
20.1	33.64 .10	38.9 0.7	9.83 .12	53.3 1.3	48.65 .10	62.6 0.7	4.52 .17	38.7 1.6
30.1	33.56 .06	38.1 0.9	9.73 .09	51.9 1.5	48.56 .07	61.8 0.9	4.36 .13	36.9 2.0
May 10.1	33.51 −.03	37.2 1.0	9.66 .05	50.3 1.8	48.51 −.03	60.8 1.1	4.25 .09	34.8 2.2
20.1	33.50 +.02	36.1 1.2	9.63 −.01	48.4 2.0	48.50 +.01	59.7 1.2	4.19 −.04	32.4 2.5
30.0	33.54 .06	34.8 1.3	9.65 +.04	46.3 2.2	48.53 .05	58.4 1.4	4.17 .00	29.7 2.8
June 9.0	33.62 .10	33.5 1.4	9.71 .08	44.0 2.3	48.61 .10	57.0 1.5	4.20 +.05	26.9 2.9
19.0	33.74 .14	32.0 1.5	9.81 .12	41.7 2.4	48.72 .14	55.5 1.6	4.27 .10	23.9 3.0
29.0	33.90 .18	30.4 1.6	9.95 .16	39.3 2.4	48.88 .17	53.9 1.6	4.40 .15	20.9 3.0
July 8.9	34.09 .21	28.9 1.6	10.13 .20	36.9 2.3	49.07 .20	52.3 1.6	4.56 .19	18.0 2.9
18.9	34.31 .23	27.3 1.5	10.35 .23	34.6 2.2	49.28 .23	50.7 1.5	4.77 .22	15.2 2.7
28.9	34.56 .26	25.8 1.4	10.58 .25	32.5 2.0	49.52 .25	49.2 1.4	5.01 .25	12.6 2.5
Aug. 7.8	34.82 .27	24.5 1.3	10.84 .27	30.6 1.8	49.79 .27	47.9 1.3	5.27 .28	10.3 2.1
17.8	35.10 .28	23.3 1.1	11.12 .28	29.0 1.4	50.06 .28	46.7 1.1	5.56 .30	8.3 1.7
27.8	35.39 .29	22.3 0.8	11.41 .29	27.7 1.1	50.35 .29	45.7 0.8	5.87 .32	6.8 1.3
Sept. 6.8	35.69 .30	21.6 0.6	11.71 .30	26.9 0.6	50.64 .30	45.0 0.6	6.19 .32	5.8 0.7
16.7	35.98 .30	21.2 −0.3	12.01 .30	26.4 −0.2	50.94 .30	44.6 −0.3	6.52 .33	5.3 −0.2
26.7	36.28 .29	21.1 0.0	12.31 .30	26.4 +0.2	51.24 .29	44.5 +.01	6.84 .32	5.4 +0.4
Oct. 6.7	36.57 .29	21.3 +0.3	12.60 .29	26.9 0.7	51.53 .29	44.7 0.4	7.16 .32	6.1 0.9
16.7	36.85 .27	21.8 0.6	12.88 .27	27.8 1.1	51.81 .28	45.2 0.6	7.47 .30	7.3 1.4
26.6	37.12 .26	22.5 0.9	13.15 .26	29.1 1.5	52.08 .26	46.0 0.9	7.76 .28	9.0 1.9
Nov. 5.6	37.37 .24	23.5 1.1	13.40 .24	30.8 1.8	52.33 .24	47.0 1.2	8.03 .25	11.1 2.3
15.6	37.60 .21	24.6 1.2	13.62 .21	32.7 2.1	52.56 .22	48.2 1.3	8.26 .22	13.6 2.7
25.5	37.80 .18	25.9 1.3	13.81 .18	34.9 2.2	52.77 .19	49.5 1.4	8.46 .18	16.4 2.9
Dec. 5.5	37.96 .15	27.2 1.4	13.97 .14	37.1 2.3	52.94 .15	50.9 1.4	8.62 .13	19.3 3.0
15.5	38.10 .11	28.6 1.4	14.08 .10	39.4 2.3	53.07 .12	52.4 1.4	8.73 .09	22.3 3.0
25.5	38.19 .07	29.9 1.3	14.16 .05	41.7 2.2	53.17 .07	53.8 1.3	8.79 +.04	25.2 2.9
35.4	38.23 +.02	31.2 +1.2	14.19 +.01	43.8 +2.0	53.22 +.03	55.1 +1.3	8.80 −.02	28.0 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		*22 Camelopardalis.		μ Geminorum.		α Argus. (*Canopus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 5 48	° ′ 7 22	h m 6 4	° ′ 69 21	h m 6 15	° ′ 22 34	h m 6 21	° ′ 52 37
	s	″	s	″	s	″	s	″
Jan. 0.5	21.69 +.07	50.1 −0.8	59.73 +.14	44.9 +2.7	20.99 +.10	40.3 0.0	11.30 .00	34.9 +3.4
10.5	21.74 +.02	58.3 0.7	59.81 +.01	47.5 2.6	21.07 .06	40.4 +0.1	11.27 −.06	38.3 3.2
20.4	21.74 −.02	57.6 0.6	59.76 −.11	50.1 2.5	21.10 +.01	40.5 0.2	11.17 .13	41.4 3.0
30.4	21.70 .07	57.1 0.5	59.58 .23	52.4 2.2	21.08 −.04	40.7 0.2	11.01 .19	44.2 2.6
Feb. 9.4	21.61 .10	56.7 0.4	59.30 .33	54.5 1.9	21.02 .09	40.9 0.2	10.79 .25	46.6 2.2
19.3	21.49 .13	56.4 0.3	58.92 .42	56.2 1.5	20.91 .12	41.2 0.2	10.51 .30	48.6 1.7
Mar. 1.3	21.34 .16	56.2 −0.1	58.47 .48	57.5 1.0	20.77 .16	41.4 0.2	10.20 .33	50.1 1.2
11.3	21.18 .17	56.1 0.0	57.97 .52	58.3 0.6	20.60 .17	41.6 0.1	9.86 .35	51.0 0.7
21.3	21.01 .17	56.1 +0.1	57.44 .53	58.6 +0.1	20.43 .18	41.7 0.1	9.50 .36	51.5 +0.2
31.2	20.85 .16	56.2 0.2	56.92 .51	58.4 −0.4	20.25 .17	41.8 +0.1	9.14 .35	51.4 −0.3
Apr. 10.2	20.70 .14	56.4 0.3	56.43 .47	57.7 0.9	20.08 .16	41.8 0.0	8.80 .34	50.8 0.8
20.2	20.57 .11	56.7 0.4	55.99 .40	56.6 1.3	19.94 .13	41.8 0.0	8.47 .31	49.7 1.3
30.2	20.48 .08	57.2 0.5	55.63 .32	55.1 1.7	19.83 .10	41.7 −0.1	8.18 .27	48.1 1.8
May 10.1	20.42 −.04	57.7 0.6	55.36 .22	53.2 2.0	19.75 .06	41.6 0.1	7.94 .22	46.1 2.2
20.1	20.40 .00	58.4 0.7	55.19 .12	51.1 2.2	19.71 −.02	41.6 −0.1	7.74 .17	43.8 2.5
30.1	20.42 +.04	59.2 0.8	55.13 −.01	48.8 2.4	19.72 +.03	41.5 0.0	7.60 .11	41.1 2.9
June 9.0	20.49 .09	60.1 0.9	55.18 +.11	46.4 2.4	19.77 .07	41.5 0.0	7.51 −.05	38.1 3.1
19.0	20.59 .13	61.1 1.0	55.35 .22	44.0 2.4	19.86 .12	41.5 0.0	7.49 +.01	34.9 3.2
29.0	20.74 .16	62.1 1.1	55.61 .32	41.6 2.3	20.00 .15	41.5 +0.1	7.52 .07	31.7 3.3
July 9.0	20.92 .20	63.1 1.1	55.98 .42	39.3 2.2	20.17 .19	41.7 0.1	7.62 .13	28.3 3.3
18.9	21.13 .22	64.2 1.1	56.44 .51	37.2 2.0	20.38 .22	41.8 0.1	7.78 .18	25.1 3.2
28.9	21.37 .25	65.3 1.0	56.99 .58	35.3 1.8	20.61 .25	41.9 0.2	7.99 .24	22.0 3.0
Aug. 7.9	21.62 .27	66.3 0.9	57.61 .65	33.6 1.6	20.87 .27	42.1 0.2	8.25 .28	19.2 2.7
17.9	21.90 .28	67.1 0.8	58.28 .70	32.1 1.3	21.16 .29	42.2 0.1	8.55 .32	16.8 2.2
27.8	22.19 .29	67.9 0.6	59.01 .75	31.0 0.9	21.46 .31	42.3 +0.1	8.89 .36	14.7 1.8
Sept. 6.8	22.48 .30	68.4 0.4	59.77 .78	30.3 0.6	21.77 .32	42.4 0.0	9.27 .38	13.2 1.2
16.8	22.78 .30	68.7 +0.2	60.56 .80	29.8 −0.3	22.09 .33	42.4 0.0	9.66 .40	12.3 −0.6
26.7	23.09 .30	68.8 0.0	61.36 .80	29.8 +0.1	22.42 .33	42.3 −0.1	10.07 .41	12.0 0.0
Oct. 6.7	23.39 .30	68.7 −0.2	62.16 .80	30.1 0.5	22.75 .33	42.2 0.2	10.48 .41	12.4 +0.7
16.7	23.68 .29	68.3 0.4	62.95 .78	30.7 0.8	23.08 .33	41.9 0.2	10.89 .40	13.4 1.3
26.7	23.97 .28	67.8 0.6	63.71 .74	31.7 1.2	23.40 .32	41.7 0.3	11.28 .38	15.0 1.9
Nov. 5.6	24.24 .26	67.1 0.8	64.43 .69	33.1 1.5	23.72 .31	41.4 0.3	11.64 .35	17.1 2.4
15.6	24.49 .24	66.2 0.9	65.09 .63	34.8 1.9	24.01 .29	41.1 0.3	11.97 .30	19.8 2.9
25.6	24.72 .22	65.2 1.0	65.68 .55	36.8 2.2	24.29 .26	40.8 0.3	12.25 .25	22.8 3.2
Dec. 5.6	24.92 .18	64.3 1.0	66.19 .45	39.1 2.4	24.53 .23	40.5 0.2	12.47 .19	26.1 3.4
15.5	25.08 .14	63.3 1.0	66.59 .34	41.6 2.5	24.73 .19	40.4 0.1	12.63 .13	29.6 3.5
25.5	25.20 .10	62.4 0.9	66.87 .23	44.2 2.6	24.90 .14	40.3 −0.1	12.72 +.06	33.2 3.5
35.5	25.28 +.05	61.5 −0.8	67.03 +.10	46.8 +2.7	25.01 +.12	40.3 0.0	12.74 −.01	36.7 +3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Geminorum.		α Canis Majoris. (*Sirius.*)		ε Canis Majoris.		δ Canis Majoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 6 30	° ′ 16 30	h m 6 39	° ′ 16 32	h m 6 53	° ′ 28 47	h m 7 3	° ′ 26 11
	s	″	s	″	s	″	s	″
Jan. 0.5	26.68 +.11	23.4 −0.4	36.46 +.08	37.2 +2.3	41.51 +.10	60.6 +3.0	17.08 +.11	32.0 +2.8
10.5	26.77 .07	23.0 0.3	36.52 +.04	39.5 2.2	41.58 +.04	63.4 2.8	17.16 .06	34.7 2.7
20.5	26.82 +.02	22.8 0.2	36.54 .00	41.6 2.0	41.60 −.01	66.1 2.6	17.20 +.01	37.4 2.5
30.4	26.81 −.03	22.7 −0.1	36.52 −.05	43.5 1.8	41.56 .06	68.5 2.3	17.18 −.05	39.7 2.3
Feb. 9.4	26.76 .08	22.6 0.0	36.45 .09	45.1 1.5	41.48 .11	70.6 2.0	17.11 .09	41.8 1.9
19.4	26.66 .11	22.6 +0.1	36.33 .13	46.4 1.2	41.35 .15	72.4 1.6	16.99 .13	43.6 1.6
Mar. 1.3	26.53 .14	22.7 0.1	36.19 .16	47.4 0.8	41.19 .18	73.8 1.2	16.85 .17	45.0 1.2
11.3	26.38 .16	22.8 0.1	36.02 .18	48.1 0.5	41.00 .20	74.8 0.8	16.67 .19	46.1 0.8
21.3	26.21 .17	23.0 0.1	35.84 .19	48.5 +0.2	40.79 .21	75.4 +0.4	16.47 .20	46.7 +0.4
31.3	26.04 .17	23.1 0.1	35.65 .19	48.5 −0.1	40.58 .21	75.6 0.0	16.27 .21	46.9 0.0
Apr. 10.2	25.88 .15	23.2 0.1	35.47 .17	48.2 0.4	40.36 .21	75.4 −0.4	16.06 .20	46.8 −0.3
20.2	25.74 .13	23.4 0.1	35.30 .15	47.6 0.7	40.17 .19	74.8 0.8	15.87 .18	46.2 0.7
30.2	25.62 .10	23.5 0.2	35.16 .13	46.7 1.0	39.99 .16	73.8 1.2	15.70 .16	45.4 1.1
May 10.2	25.53 .07	23.7 0.2	35.04 .10	45.5 1.3	39.84 .13	72.4 1.5	15.55 .13	44.1 1.4
20.1	25.48 −.03	23.9 0.2	34.96 .06	44.1 1.5	39.73 .10	70.7 1.8	15.44 .09	42.6 1.7
30.1	25.48 +.01	24.2 0.3	34.92 −.02	42.5 1.7	39.65 .06	68.8 2.1	15.37 .06	40.7 2.0
June 9.1	25.51 .05	24.4 0.3	34.92 +.02	40.6 1.9	39.61 −.02	66.5 2.3	15.33 −.02	38.7 2.2
19.0	25.59 .10	24.8 0.4	34.95 .06	38.7 2.0	39.62 +.03	64.1 2.5	15.33 +.02	36.4 2.4
29.0	25.70 .13	25.1 0.4	35.03 .09	36.6 2.1	39.67 .07	61.6 2.6	15.37 .06	34.0 2.4
July 9.0	25.85 .17	25.6 0.4	35.14 .13	34.5 2.1	39.75 .11	59.0 2.6	15.45 .10	31.5 2.5
19.0	26.04 .20	26.0 0.4	35.29 .16	32.4 2.0	39.88 .14	56.4 2.6	15.57 .14	29.0 2.5
28.9	26.25 .23	26.4 0.4	35.47 .19	30.4 1.9	40.04 .18	53.9 2.4	15.72 .17	26.6 2.3
Aug. 7.9	26.50 .25	26.7 0.3	35.67 .22	28.6 1.7	40.24 .21	51.6 2.2	15.90 .20	24.4 2.1
17.9	26.75 .27	27.0 0.3	35.90 .24	27.0 1.5	40.46 .24	49.5 1.9	16.12 .23	22.4 1.9
27.9	27.03 .29	27.3 0.2	36.15 .26	25.7 1.1	40.71 .26	47.8 1.5	16.36 .25	20.7 1.5
Sept. 6.8	27.33 .30	27.4 +0.1	36.42 .28	24.7 0.8	40.98 .28	46.4 1.1	16.62 .27	19.4 1.1
16.8	27.63 .31	27.4 −0.1	36.71 .29	24.2 −0.3	41.28 .30	45.6 0.6	16.91 .29	18.6 0.6
26.8	27.94 .32	27.2 0.2	37.00 .30	24.1 +0.1	41.58 .31	45.2 −0.1	17.21 .31	18.2 −0.1
Oct. 6.7	28.26 .32	27.0 0.3	37.30 .30	24.4 0.5	41.90 .32	45.4 +0.4	17.52 .32	18.3 +0.4
16.7	28.58 .32	26.5 0.5	37.61 .30	25.1 1.0	42.22 .32	46.1 1.0	17.84 .32	19.0 0.9
26.7	28.90 .31	26.0 0.6	37.91 .30	26.3 1.4	42.54 .32	47.3 1.5	18.15 .32	20.2 1.4
Nov. 5.7	29.21 .30	25.4 0.6	38.20 .28	27.9 1.7	42.85 .30	49.0 1.9	18.47 .31	21.8 1.9
15.6	29.50 .28	24.7 0.7	38.47 .27	29.8 2.0	43.14 .28	51.1 2.3	18.76 .29	23.8 2.2
25.6	29.78 .26	24.1 0.7	38.73 .24	32.0 2.3	43.41 .26	53.6 2.6	19.04 .26	26.2 2.5
Dec. 5.6	30.02 .23	23.4 0.6	38.95 .21	34.3 2.4	43.65 .22	56.4 2.8	19.28 .23	28.9 2.8
15.6	30.24 .19	22.8 0.6	39.14 .17	36.7 2.5	43.85 .18	59.3 3.0	19.49 .19	31.7 2.9
25.5	30.41 .15	22.3 0.5	39.29 .12	39.2 2.4	44.01 .13	62.3 3.0	19.66 .14	34.6 2.9
35.5	30.53 +.10	21.9 −0.4	39.39 +.08	41.6 +2.3	44.11 +.08	65.2 +2.9	19.78 +.09	37.5 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Geminorum.		* Piazzi vii. 67.		α Geminorum. (*Castor.*)		α Canis Minoris. (*Procyon.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$7^{h}\ 12^{m}$	$22^{\circ}\ 12'$	$7^{h}\ 17^{m}$	$68^{\circ}\ 42'$	$7^{h}\ 26^{m}$	$32^{\circ}\ 9'$	$7^{h}\ 32^{m}$	$5^{\circ}\ 32'$
	s	″	s	″	s	″	s	″
Jan. 0.5	36.58 +.17	49.6 −0.2	47.81 +.33	72.1 +2.4	34.04 +.20	49.3 +0.4	43.07 +.17	51.4 −1.3
10.5	36.72 .12	49.5 0.0	48.08 .21	74.6 2.6	34.21 .14	49.8 0.6	43.22 .12	50.2 1.2
20.5	36.81 .06	49.5 +0.1	48.23 +.08	77.2 2.6	34.33 .08	50.4 0.7	43.31 .07	49.1 1.0
30.5	36.84 +.01	49.7 0.2	48.25 −.05	79.8 2.6	34.38 +.03	51.1 0.8	43.36 +.02	48.2 0.8
Feb. 9.4	36.83 −.04	50.0 0.3	48.14 .17	82.3 2.4	34.38 −.03	51.9 0.8	43.35 −.03	47.4 0.6
19.4	36.76 .09	50.3 0.3	47.91 .28	84.6 2.1	34.32 .08	52.8 0.8	43.30 .07	46.9 0.5
Mar. 1.4	36.66 .12	50.7 0.4	47.59 .37	86.6 1.8	34.22 .12	53.6 0.8	43.21 .11	46.5 0.3
11.3	36.52 .15	51.0 0.4	47.19 .44	88.2 1.4	34.07 .16	54.3 0.7	43.09 .14	46.3 −0.1
21.3	36.36 .17	51.4 0.3	46.73 .48	89.4 0.9	33.91 .18	54.9 0.6	42.94 .15	46.3 0.0
31.3	36.19 .17	51.7 0.3	46.24 .50	90.1 +0.5	33.72 .19	55.4 0.4	42.78 .16	46.3 +0.1
Apr. 10.3	36.02 .16	51.9 0.2	45.74 .49	90.3 0.0	33.54 .18	55.8 0.2	42.62 .16	46.5 0.2
20.2	35.86 .15	52.1 0.1	45.26 .46	90.0 −0.5	33.36 .17	55.9 +0.1	42.47 .15	46.8 0.3
30.2	35.72 .13	52.2 +0.1	44.82 .41	89.2 1.0	33.20 .15	55.9 −0.1	42.33 .13	47.2 0.4
May 10.2	35.61 .10	52.3 0.0	44.45 .34	88.1 1.4	33.07 .12	55.8 0.2	42.22 .10	47.7 0.5
20.2	35.53 .06	52.3 0.0	44.15 .26	86.5 1.7	32.97 .08	55.5 0.4	42.13 .07	48.2 0.6
30.1	35.49 −.02	52.3 0.0	43.93 .17	84.6 2.0	32.91 −.04	55.1 0.5	42.07 −.04	48.8 0.7
June 9.1	35.49 +.02	52.3 0.0	43.81 −.07	82.4 2.3	32.89 .00	54.6 0.6	42.05 .00	49.6 0.7
19.1	35.53 .06	52.2 −0.1	43.79 +.03	80.1 2.4	32.92 +.05	54.0 0.6	42.07 +.03	50.3 0.8
29.0	35.61 .10	52.2 0.1	43.88 .13	77.6 2.5	32.98 .09	53.3 0.7	42.11 .07	51.1 0.8
July 9.0	35.73 .14	52.1 0.1	44.06 .23	75.0 2.6	33.09 .13	52.6 0.7	42.20 .10	51.9 0.8
19.0	35.88 .17	52.0 0.1	44.34 .32	72.5 2.5	33.24 .16	51.9 0.7	42.31 .13	52.7 0.8
29.0	36.06 .20	51.9 0.1	44.70 .41	70.0 2.5	33.42 .20	51.1 0.8	42.46 .16	53.4 0.7
Aug. 7.9	36.27 .23	51.7 0.2	45.15 .49	67.6 2.3	33.64 .23	50.4 0.8	42.63 .19	54.1 0.6
17.9	36.51 .25	51.6 0.2	45.68 .56	65.3 2.1	33.88 .26	49.6 0.8	42.83 .21	54.6 0.5
27.9	36.77 .27	51.3 0.3	46.27 .62	63.3 1 9	34.15 .28	48.8 0.8	43.05 .23	55.0 0.3
Sept. 6.9	37.05 .29	51.0 0.4	46.92 .68	61.5 1.7	34.45 .31	48.0 0.8	43.30 .25	55.2 +0.1
16.8	37.35 .31	50.6 0.5	47.62 .72	60.0 1.4	34.77 .33	47.2 0.8	43.56 .27	55.1 −0.2
26.8	37.67 .32	50.0 0.5	48.36 .75	58.8 1.0	35.10 .34	46.4 0.8	43.84 .29	54.9 0.4
Oct. 6.8	38.00 .33	49.5 0.6	49.12 .78	57.9 0.7	35.45 .36	45.6 0.8	44.13 .30	54.3 0.7
16.7	38.33 .34	48.8 0.7	49.91 .79	57.4 −0.3	35.81 .37	44.8 0.8	44.44 .31	53.5 0.9
26.7	38.67 .34	48.1 0.7	50.70 .78	57.3 +0.1	36.18 .37	44.1 0.7	44.75 .32	52.6 1.1
Nov. 5.7	39.00 .33	47.3 0.7	51.47 .77	57.5 0.5	36.55 .37	43.5 0.6	45.07 .31	51.4 1.3
15.7	39.33 .32	46.6 0.7	52.22 .73	58.2 0.9	36.92 .36	42.9 0.5	45.38 .31	50.0 1.4
25.6	39.65 .31	46.0 0.6	52.92 .68	59.3 1.3	37.27 .34	42.5 0.3	45.67 .29	48.5 1.5
Dec. 5.6	39.94 .28	45.3 0.5	53.57 .60	60.8 1.7	37.59 .31	42.3 −0.1	45.95 .27	47.0 1.5
15.6	40.20 .24	44.9 0.4	54.13 .51	62.7 2.0	37.89 .28	42.3 +0.1	46.20 .23	45.5 1.5
25.6	40.42 .20	44.5 0.3	54.59 .41	64.8 2.3	38.14 .23	42.4 0.2	46.42 .20	44.0 1.4
35.5	40.59 +.15	44.3 −0.1	54.94 +.29	67.2 +2.5	38.35 +.18	42.8 +0.4	46.59 +.15	42.7 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	3 Geminorum. (*Pollux.*)		φ Geminorum.		*3 Ursæ Majoris (H.)		15 Argus (ι)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 7 37	° ′ 28 19	h m 7 45	° ′ 27 5	h m 8 0	° ′ 68 50	h m 8 2	° ′ 23 56
	s	″	s	″	s	″	s	″
Jan. 0.5	37.02 +.20	47.1 +0.1	47.86 +.21	27.6 0.0	17.69 +.44	30.2 +2.2	11.52 +.17	22.5 +2.8
10.5	37.20 .15	47.3 0.3	48.04 .16	27.7 +0.2	18.07 .32	32.5 2.4	11.67 .13	25.4 2.8
20.5	37.32 .09	47.6 0.4	48.17 .10	27.9 0.3	18.33 .19	35.0 2.6	11.77 .07	28.1 2.7
30.5	37.38 +.03	48.1 0.5	48.24 +.04	28.3 0.5	18.45 +.06	37.6 2.6	11.81 +.02	30.7 2.5
Feb. 9.4	37.38 −.02	48.7 0.6	48.26 −.01	28.8 0.6	18.45 −.07	40.2 2.6	11.81 −.03	33.0 2.2
19.4	37.33 .07	49.4 0.7	48.22 .06	29.5 0.6	18.32 .18	42.7 2.4	11.75 .08	35.1 1.9
Mar. 1.4	37.24 .11	50.1 0.7	48.14 .10	30.1 0.7	18.09 .29	45.0 2.2	11.65 .12	36.8 1.6
11.3	37.11 .15	50.7 0.6	48.02 .14	30.8 0.6	17.75 .38	47.1 1.8	11.52 .15	38.2 1.2
21.3	36.95 .17	51.3 0.6	47.86 .16	31.4 0.6	17.34 .44	48.7 1.4	11.36 .17	39.2 0.8
31.3	36.78 .18	51.8 0.5	47.70 .17	31.9 0.5	16.88 .48	49.9 1.0	11.18 .18	39.9 0.5
Apr. 10.3	36.60 .18	52.2 0.3	47.52 .17	32.3 0.4	16.40 .49	50.6 +0.5	10.99 .19	40.2 +0.1
20.2	36.43 .17	52.5 0.2	47.36 .16	32.6 0.3	15.91 .48	50.9 0.0	10.81 .18	40.1 −0.2
30.2	36.27 .14	52.6 +0.1	47.20 .14	32.8 +0.1	15.44 .45	50.6 −0.5	10.64 .17	39.7 0.6
May 10.2	36.14 .12	52.6 −0.1	47.07 .12	32.8 0.0	15.01 .40	49.9 1.0	10.48 .15	39.0 0.9
20.2	36.05 .08	52.5 0.2	46.97 .08	32.8 −0.1	14.65 .33	48.7 1.4	10.34 .12	37.9 1.2
30.1	35.98 −.04	52.2 0.3	46.91 .05	32.6 0.2	14.35 .25	47.1 1.8	10.24 .09	36.5 1.5
June 9.1	35.96 .00	51.9 0.4	46.88 −.01	32.4 0.3	14.14 .17	45.2 2.1	10.16 .06	34.9 1.8
19.1	35.97 +.04	51.5 0.4	46.89 +.03	32.1 0.4	14.02 −.07	43.0 2.3	10.12 −.03	33.0 2.0
29.0	36.03 .07	51.0 0.5	46.94 .07	31.7 0.4	14.00 +.02	40.5 2.5	10.11 +.01	31.0 2.1
July 9.0	36.13 .11	50.6 0.5	47.02 .10	31.2 0.5	14.07 .12	38.0 2.6	10.14 .04	28.8 2.2
19.0	36.26 .15	50.0 0.6	47.14 .14	30.7 0.5	14.24 .21	35.3 2.7	10.20 .08	26.6 2.2
29.0	36.42 .18	49.5 0.6	47.30 .17	30.2 0.6	14.49 .30	32.6 2.7	10.29 .11	24.5 2.2
Aug. 7.9	36.62 .21	48.8 0.6	47.49 .20	29.6 0.6	14.84 .39	29.9 2.7	10.42 .15	22.4 2.0
17.9	36.84 .24	48.2 0.7	47.71 .23	29.0 0.7	15.27 .47	27.2 2.6	10.58 .18	20.4 1.8
27.9	37.10 .27	47.5 0.7	47.95 .26	28.3 0.7	15.77 .54	24.7 2.4	10.78 .21	18.7 1.5
Sept. 6.9	37.38 .29	46.8 0.8	48.22 .28	27.5 0.8	16.34 .60	22.4 2.2	10.99 .23	17.3 1.2
16.8	37.67 .31	46.0 0.8	48.51 .30	26.7 0.8	16.97 .66	20.3 2.0	11.24 .26	16.4 0.8
26.8	37.99 .33	45.2 0.8	48.82 .32	25.9 0.9	17.66 .71	18.5 1.7	11.51 .28	15.8 −0.3
Oct. 6.8	38.33 .34	44.3 0.9	49.15 .34	25.0 0.9	18.39 .75	17.0 1.3	11.81 .30	15.7 +0.2
16.7	38.67 .35	43.4 0.9	49.49 .35	24.1 0.9	19.15 .78	15.8 1.0	12.12 .32	16.1 0.7
26.7	39.03 .36	42.6 0.8	49.85 .36	23.1 0.9	19.94 .79	15.0 0.6	12.43 .32	17.0 1.1
Nov. 5.7	39.39 .36	41.8 0.8	50.20 .36	22.2 0.9	20.73 .79	14.6 −0.2	12.76 .33	18.4 1.6
15.7	39.74 .35	41.0 0.7	50.56 .35	21.4 0.8	21.52 .77	14.7 +0.3	13.08 .32	20.2 2.0
25.6	40.08 .33	40.4 0.6	50.90 .34	20.6 0.7	22.27 .74	15.2 0.7	13.39 .30	22.4 2.4
Dec. 5.6	40.41 .31	39.9 0.4	51.23 .31	20.0 0.5	22.98 .68	16.2 1.2	13.69 .28	24.9 2.6
15.6	40.70 .27	39.5 −0.2	51.53 .28	19.6 0.4	23.62 .60	17.5 1.6	13.95 .25	27.6 2.8
25.6	40.95 .23	39.4 0.0	51.79 .24	19.3 −0.2	24.18 .51	19.3 1.9	14.18 .20	30.5 2.9
35.5	41.16 +.18	39.5 +0.2	52.00 +.19	19.2 0.0	24.63 +.41	21.4 +2.2	14.36 +.16	33.4 +2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Hydræ.		ι Ursæ Majoris.		*σ^2 Ursæ Majoris.		κ Cancri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 8 40	° ′ 6 52	h m 8 50	° ′ 48 31	h m 8 59	° ′ 67 38	h m 9 0	° ′ 11 10
	s	″	s	″	s	″	s	″
Jan. 0.6	6.73 +.23	52.5 −1.5	35.44 +.34	62.5 +0.8	19.18 +.54	31.8 +1.6	55.75 +.25	30.7 −1.3
10.6	6.94 .19	51.2 1.3	35.76 .28	63.4 1.1	19.67 .44	33.5 2.0	55.98 .21	29.5 1.1
20.5	7.10 .14	50.0 1.1	36.00 .21	64.7 1.4	20.06 .33	35.7 2.3	56.17 .16	28.5 0.9
30.5	7.21 .09	49.0 0.9	36.17 .14	66.2 1.6	20.33 .21	38.1 2.5	56.30 .11	27.7 0.7
Feb. 9.5	7.27 +.03	48.2 0.7	36.27 +.06	67.9 1.8	20.47 +.08	40.7 2.6	56.39 .06	27.2 0.4
19.4	7.28 −.01	47.7 0.5	36.29 −.01	69.7 1.8	20.50 −.04	43.3 2.6	56.42 +.01	26.8 0.2
Mar. 1.4	7.25 .05	47.3 0.3	36.25 .08	71.5 1.8	20.40 .15	45.9 2.5	56.41 −.04	26.7 −0.1
11.4	7.18 .09	47.1 −0.1	36.15 .13	73.2 1.7	20.20 .25	48.3 2.3	56.35 .07	26.7 +0.1
21.4	7.07 .12	47.1 +0.1	35.99 .18	74.8 1.5	19.91 .33	50.4 2.0	56.26 .10	26.9 0.2
31.3	6.95 .13	47.2 0.2	35.80 .21	76.2 1.3	19.55 .39	52.2 1.6	56.15 .12	27.2 0.3
Apr. 10.3	6.81 .14	47.5 0.3	35.58 .23	77.3 1.0	19.14 .43	53.6 1.2	56.02 .13	27.6 0.4
20.3	6.66 .14	47.8 0.4	35.35 .23	78.1 0.6	18.70 .45	54.6 0.7	55.88 .14	28.0 0.4
30.3	6.53 .13	48.2 0.4	35.12 .22	78.6 +0.3	18.25 .44	55.0 +0.2	55.74 .14	28.4 0.5
May 10.2	6.40 .12	48.7 0.5	34.90 .21	78.8 0.0	17.82 .42	55.0 −0.3	55.61 .12	28.9 0.5
20.2	6.29 .10	49.2 0.5	34.71 .18	78.5 −0.4	17.42 .38	54.4 0.8	55.50 .11	29.4 0.5
30.2	6.20 .08	49.7 0.6	34.55 .15	78.0 0.7	17.06 .33	53.5 1.2	55.41 .08	29.8 0.5
June 9.1	6.14 .04	50.3 0.6	34.42 .11	77.2 1.0	16.77 .26	52.0 1.6	55.33 .06	30.3 0.4
19.1	6.11 −.02	50.9 0.6	34.34 .06	76.0 1.3	16.54 .19	50.2 2.0	55.29 −.03	30.7 0.4
29.1	6.10 +.01	51.5 0.6	34.30 −.01	74.6 1.5	16.39 .11	48.1 2.3	55.27 .00	31.1 0.4
July 9.1	6.13 .04	52.1 0.6	34.31 +.03	73.0 1.7	16.32 −.03	45.7 2.5	55.28 +.02	31.4 0.3
19.0	6.18 .07	52.6 0.5	34.36 .08	71.3 1.9	16.33 +.05	43.1 2.7	55.32 .05	31.7 0.2
29.0	6.26 .10	53.1 0.4	34.46 .12	69.3 2.0	16.43 .14	40.3 2.9	55.39 .08	31.9 +0.2
Aug. 8.0	6.38 .13	53.5 0.3	34.61 .17	67.3 2.1	16.60 .22	37.4 2.9	55.48 .11	32.0 0.0
18.0	6.52 .15	53.8 +0.2	34.79 .21	65.2 2.1	16.86 .30	34.5 3.0	55.61 .14	31.9 −0.1
27.9	6.69 .18	53.9 0.0	34.02 .25	63.1 2.1	17.20 .37	31.5 2.9	55.76 .17	31.8 0.3
Sept. 6.9	6.88 .21	53.9 −0.2	35.29 .29	61.0 2.1	17.61 .45	28.6 2.8	55.94 .19	31.4 0.5
16.9	7.10 .23	53.6 0.4	35.60 .33	58.9 2.1	18.09 .52	25.9 2.7	56.15 .22	30.8 0.6
26.8	7.35 .26	53.1 0.6	35.95 .36	56.8 2.0	18.64 .58	23.3 2.5	56.38 .25	30.1 0.8
Oct. 6.8	7.62 .28	52.3 0.9	36.33 .40	54.9 1.9	19.25 .64	21.0 2.2	56.64 .28	29.2 1.1
16.8	7.91 .30	51.3 1.1	36.74 .43	53.1 1.7	19.91 .68	19.0 1.9	56.93 .30	28.0 1.2
26.8	8.21 .32	50.1 1.3	37.18 .45	51.5 1.5	20.61 .72	17.3 1.5	57.24 .32	26.7 1.4
Nov. 5.7	8.54 .33	48.8 1.5	37.63 .46	50.1 1.2	21.35 .74	15.9 1.1	57.56 .33	25.2 1.6
15.7	8.86 .33	47.2 1.6	38.10 .47	49.0 0.9	22.10 .75	15.1 0.6	57.89 .34	23.6 1.6
25.7	9.19 .32	45.6 1.7	38.57 .46	48.2 0.6	22.85 .74	14.7 −0.2	58.23 .33	21.9 1.7
Dec. 5.7	9.51 .31	43.9 1.7	39.02 .44	47.8 −0.2	23.58 .71	14.8 +0.3	58.56 .32	20.3 1.6
15.6	9.81 .29	42.2 1.7	39.45 .42	47.8 +0.2	24.27 .66	15.3 0.8	58.87 .31	18.7 1.6
25.6	10.08 .26	40.6 1.6	39.85 .37	48.1 0.5	24.90 .60	16.4 1.3	59.17 .28	17.1 1.4
35.6	10.32 +.22	39.1 −1.4	40.19 +.32	48.8 +0.9	25.45 +.51	17.9 +1.7	59.42 +.24	15.8 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Argus.		*1 Draconis (H.)		α Hydræ.		*d Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 9 13	° ′ 58 44	h m 9 18	° ′ 81 52	h m 9 21	° ′ 8 6	h m 9 23	° ′ 70 22
	s	″	s	″	s	″	s	″
Jan. 0.6	44.14 +.31	29.3 +3.5	64.54+1.37	43.4 +1.9	24.12 +.26	40.4 +2.3	20.92 +.65	49.3 +1.5
10.6	44.41 .23	32.9 3.7	65.79 1.13	45.5 2.3	24.35 .21	42.7 2.2	21.52 .54	51.0 1.9
20.6	44.60 .15	36.7 3.8	66.78 .75	48.0 2.7	24.54 .17	44.8 2.1	22.00 .42	53.0 2.3
30.5	44.71 +.07	40.5 3.8	67.48 .54	50.9 2.9	24.69 .12	46.8 1.9	22.36 .29	55.4 2.5
Feb. 9.5	44.73 −.02	44.2 3.7	67.86 +.23	53.8 3.0	24.78 .07	48.5 1.6	22.58 .15	58.1 2.7
19.5	44.68 .09	47.8 3.5	67.93 −.09	56.9 3.0	24.82 +.02	50.1 1.4	22.66 +.02	60.8 2.8
Mar. 1.4	44.54 .16	51.2 3.2	67.70 .39	59.9 2.9	24.82 −.02	51.3 1.2	22.61 −.11	63.5 2.7
11.4	44.35 .23	54.3 2.9	67.17 .66	62.7 2.7	24.77 .06	52.4 0.9	22.44 .23	66.1 2.5
21.4	44.10 .28	56.9 2.5	66.39 .89	65.2 2.3	24.70 .09	53.1 0.6	22.15 .33	68.5 2.2
31.4	43.80 .32	59.2 2.0	65.40 1.08	67.3 1.9	24.59 .12	53.6 0.4	21.78 .41	70.6 1.9
Apr. 10.3	43.47 .34	61.0 1.6	64.24 1.22	69.0 1.4	24.46 .13	53.9 +0.2	21.34 .47	72.3 1.5
20.3	43.11 .36	62.3 1.1	62.97 1.30	70.1 0.8	24.33 .14	54.0 0.0	20.85 .50	73.5 1.0
30.3	42.75 .36	63.2 +0.6	61.66 1.33	70.6 +0.3	24.20 .13	53.8 −0.3	20.34 .51	74.2 +0.5
May 10.3	42.38 .36	63.5 0.0	60.33 1.31	70.7 −0.2	24.06 .13	53.5 0.5	19.83 .50	74.4 0.0
20.2	42.03 .34	63.3 −0.5	59.05 1.24	70.1 0.9	23.94 .12	52.9 0.6	19.35 .47	74.1 −0.5
30.2	41.70 .32	62.6 1.0	57.87 1.12	68.9 1.4	23.84 .10	52.2 0.8	18.90 .42	73.3 1.0
June 9.2	41.39 .29	61.4 1.4	56.82 .97	67.3 1.9	23.75 .08	51.4 0.9	18.52 .35	72.1 1.5
19.1	41.12 .25	59.7 1.9	55.94 .79	65.3 2.3	23.68 .05	50.4 1.1	18 20 .28	70.4 1.9
29.1	40.90 .20	57.6 2.2	55.24 .59	62.8 2.6	23.64 −.03	49.3 1.1	17.96 .20	68.3 2.2
July 9.1	40.72 .15	55.2 2.5	54.75 .38	60.0 3.0	23.62 .00	48.1 1.2	17.80 .11	65.9 2.5
19.1	40.59 .10	52.6 2.8	54.49 −.15	56.9 3.2	23.63 +.02	46.9 1.2	17.74 −.02	63.2 2.8
29.0	40.52 −.04	49.7 2.9	54.45 +.08	53.6 3.3	23.67 .04	45.7 1.2	17.76 +.07	60.4 3.0
Aug. 8.0	40.52 +.03	46.7 3.0	54.65 .31	50.3 3.4	23.73 .07	44.6 1.1	17.88 .16	57.3 3.1
18.0	40.58 .09	43.7 3.0	55.07 .54	46.8 3.4	23.82 .11	43.6 1.0	18.09 .26	54.2 3.1
28.0	40.71 .16	40.8 2.8	55.72 .76	43.4 3.4	23.94 .14	42.7 0.8	18.39 .35	51.1 3.1
Sept. 6.9	40.91 .23	38.1 2.5	56.59 .97	40.1 3.3	24.09 .17	42.0 0.5	18.78 .43	48.0 3.1
16.9	41.17 .29	35.8 2.2	57.66 1.17	36.9 3.1	24.27 .20	41.7 −0.2	19.25 .51	44.9 3.0
26.9	41.49 .35	33.8 1.7	58.92 1.35	34.0 2.8	24.49 .23	41.6 +0.1	19.80 .59	42.1 2.8
Oct. 6.8	41.87 .41	32.3 1.2	60.35 1.51	31.3 2.5	24.72 .25	41.8 0.4	20.43 .66	39.4 2.5
16.8	42.30 .45	31.4 −0.6	61.93 1.65	29.0 2.1	24.99 .28	42.4 0.8	21.12 .72	37.1 2.2
26.8	42.77 .48	31.2 +0.1	63.63 1.75	27.1 1.7	25.28 .30	43.3 1.1	21.88 .78	35.0 1.8
Nov. 5.8	43.26 .50	31.6 0.7	65.41 1.82	25.7 1.2	25.59 .32	44.7 1.5	22.67 .81	33.4 1.4
15.7	43.76 .50	32.6 1.4	67.25 1.85	24.7 0.7	25.92 .33	46.3 1.8	23.49 .83	32.2 1.0
25.7	44.26 .49	34.2 2.0	69.10 1.84	24.3 −0.1	26.25 .33	48.2 2.0	24.33 .83	31.5 −0.5
Dec. 5.7	44.73 .46	36.5 2.5	70.91 1.77	24.5 +0.5	26.57 .32	50.3 2.2	25.16 .81	31.3 +0.1
15.7	45.17 .41	39.2 3.0	72.63 1.66	25.3 1.0	26.89 .30	52.5 2.3	25.95 .77	31.6 0.6
25.6	45.55 .35	42.4 3.4	74.21 1.49	26.6 1.6	27.18 .28	54.8 2.3	26.68 .70	32.5 1.1
35.6	45.87 +.28	45.9 +3.6	75.60+1.28	28.4 +2.1	27.43 +.24	57.1 +2.3	27.34 +.61	33.9 +1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Ursæ Majoris.		ε Leonis.		μ Leonis.		α Leonis. (*Regulus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$9^{h}\,24^{m}$	$52^{\circ}\,14'$	$9^{h}\,38^{m}$	$24^{\circ}\,20'$	$9^{h}\,45^{m}$	$26^{\circ}\,35'$	$10^{h}\,1^{m}$	$12^{\circ}\,34'$
	s	″	s	″	s	″	s	″
Jan. 0.6	26.25 +.40	56.2 +1.1	42.28 +.30	72.4 −0.9	36.11 +.31	57.0 −0.8	39.93 +.30	58.7 −1.5
10.6	26.62 .34	57.0 1.4	42.57 .26	71.7 0.5	36.40 .27	56.4 0.5	40.21 .26	57.3 1.3
20.6	26.92 .27	58.3 1.7	42.81 .22	71.3 −0.2	36.65 .22	56.1 −0.2	40.45 .22	56.2 1.0
30.5	27.15 .19	59.8 1.9	42.99 .16	71.2 0.0	36.85 .17	56.1 +0.1	40.64 .17	55.3 0.8
Feb. 9.5	27.30 .11	61.6 2.1	43.13 .11	71.3 +0.3	36.99 .12	56.3 0.4	40.79 .12	54.7 0.5
19.5	27.37 +.03	63.6 2.1	43.21 +.05	71.7 0.5	37.08 .06	56.9 0.7	40.88 .07	54.3 −0.2
Mar. 1.4	27.37 −.04	65.6 2.1	43.23 .00	72.4 0.7	37.11 +.01	57.6 0.8	40.93 +.02	54.2 0.0
11.4	27.30 .10	67.7 2.0	43.21 −.04	73.2 0.8	37.10 −.04	58.5 0.9	40 93 −.02	54.3 +0.2
21.4	27.17 .16	69.6 1.8	43.15 .08	74.0 0.9	37.04 .08	59.5 1.0	40.89 .06	54.6 0.4
31.4	26.98 .20	71.3 1.6	43.05 .11	74.9 0.9	36.94 .11	60.5 1.0	40.82 .08	55.0 0.5
Apr. 10.3	26.77 .23	72.8 1.3	42.93 .13	75.8 0.9	36.83 .13	61.5 0.9	40.73 .10	55.5 0.5
20.3	26.53 .25	73.9 1.0	42.80 .14	76.6 0.8	36.69 .14	62.4 0.8	40.62 .12	56.0 0.6
30.3	26.28 .25	74.7 0.6	42.66 .14	77.3 0.7	36.55 .14	63.1 0.7	40.50 .12	56.6 0.6
May 10.3	26.03 .24	75.1 +0.2	42.52 .13	77.9 0.5	36.41 .14	63.8 0.6	40.38 .12	57.2 0.6
20.2	25.80 .22	75.2 −0.2	42.39 .12	78.4 0.4	36.27 .13	64.3 0.4	40.26 .12	57.7 0.5
30.2	25.60 .19	74.8 0.6	42.28 .11	78.7 0.2	36.15 .11	64.6 0.2	40.15 .10	58.3 0.5
June 9.2	25.43 .15	74.1 0.9	42.18 .08	78.8 +0.1	36.05 .09	64.7 +0.1	40.06 .08	58.7 0.4
19.1	25.29 .12	73.0 1.2	42.11 .06	78.8 −0.1	35.98 .07	64.7 −0.1	39.98 .07	59.1 0.4
29.1	25.20 .07	71.6 1.5	42.06 .03	78.7 0.2	35.92 .04	64.5 0.3	39.93 .05	59.5 0.3
July 9.1	25.15 −.02	69.9 1.8	42.04 −.01	78.4 0.4	35.89 −.01	64.0 0.5	39.89 −.02	59.7 0.2
19.1	25.15 +.02	68.0 2.0	42.05 +.02	77.9 0.5	35.89 +.02	63.5 0.7	39.88 .00	59.8 +0.1
20.0	25.20 .07	65.9 2.2	42.09 .05	77.3 0.7	35.92 .04	62.7 0.8	39.89 +.02	59.8 0.0
Aug. 8.0	25.29 .12	63.6 2.3	42.15 .08	76.5 0.8	35.98 .07	61.8 1.0	39.93 .05	59.7 −0.2
18.0	25.43 .16	61.2 2.4	42.25 .11	75.6 1.0	36.07 .10	60.8 1.1	39.99 .08	59.5 0.3
28.0	25.62 .21	58.7 2.5	42.37 .14	74.6 1.1	36.19 .13	59.6 1.3	40.08 .11	59.1 0.5
Sept. 6.9	25.85 .26	56.2 2.5	42.53 .17	73.4 1.3	36.34 .17	58.2 1.4	40.21 .14	58.5 0.7
16.9	26.13 .30	53.7 2.5	42.71 .20	72.0 1.4	36.52 .20	56.7 1.6	40.36 .17	57.7 0.9
26.9	26.46 .35	51.2 2.4	42.93 .24	70.5 1.6	36.74 .23	55.1 1.7	40.54 .20	56.7 1.1
Oct. 6.8	26.82 .39	48.8 2.3	43.18 .27	68.9 1.7	36.99 .27	53.3 1.8	40.76 .23	55.4 1.3
16.8	27.23 .42	46.6 2.1	43.47 .30	67.2 1.7	37.27 .30	51.5 1.8	41.01 .26	54.0 1.5
26.8	27.67 .46	44.6 1.9	43.78 .32	65.4 1.8	37.58 .32	49.6 1.9	41.29 .29	52.4 1.7
Nov. 5.8	28.14 .48	42.8 1.6	44.11 .34	63.6 1.8	37.91 .35	47.8 1.9	41.59 .32	50.7 1.8
15.7	28.63 .49	41.3 1.3	44.46 .36	61.8 1.8	38.27 .36	45.9 1.8	41.92 .33	48.8 1.9
25.7	29.13 .50	40.2 0.9	44.82 .36	60.1 1.7	38.63 .37	44.2 1.7	42.26 .34	46.9 1.9
Dec. 5.7	29.62 .49	39.4 0.5	45.19 .36	58.5 1.5	39.00 .37	42.6 1.5	42.60 .34	45.0 1.9
15.7	30.10 .47	39.1 −0.1	45.54 .35	57.1 1.3	39.37 .36	41.2 1.3	42.94 .33	43.2 1.8
25.6	30.55 .43	39.3 +0.4	45.88 .32	55.9 1.0	39.71 .33	40.1 1.0	43.27 .31	41.4 1.7
35.6	30.95 +.37	39.8 +0.8	46.18 +.29	55.0 −0.8	40.02 +.29	39.2 −0.7	43.57 +.29	39.9 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*32 Ursæ Majoris.		γ¹ Leonis.		*9 Draconis (H.)		ρ Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$10^{h}\ 8^{m}$	$65^{\circ}\ 43'$	$10^{h}\ 13^{m}$	$20^{\circ}\ 28'$	$10^{h}\ 24^{m}$	$76^{\circ}\ 21'$	$10^{h}\ 26^{m}$	$9^{\circ}\ 56'$
	s	″	s	″	s	″	s	″
Jan. 0.6	53.48 +.61	59.2 +0.7	1.70 +.32	41.6 −1.2	23.40 +1.00	28.0 +0.9	10.74 +.31	77.8 −1.7
10.6	54.05 .53	60.2 1.2	2.00 .28	40.5 0.9	24.35 .90	29.2 1.5	11.03 .28	76.2 1.5
20.6	54.54 .45	61.7 1.7	2.26 .24	39.7 0.6	25.18 .76	30.9 1.9	11.29 .24	74.8 1.3
30.6	54.94 .35	63.6 2.1	2.47 .19	39.3 0.3	25.86 .60	33.1 2.4	11.51 .19	73.7 1.0
Feb. 9.5	55.24 .24	65.8 2.4	2.64 .14	39.1 −0.1	26.37 .42	35.6 2.7	11.67 .14	72.8 0.7
19.5	55.42 .13	68.3 2.6	2.75 .09	39.1 +0.2	26.70 .23	38.4 2.9	11.79 .09	72.2 0.4
Mar. 1.5	55.49 +.02	70.9 2.7	2.82 +.04	39.6 0.6	26.84 +.05	41.4 3.0	11.86 .05	71.9 −0.2
11.4	55.46 −.09	73.6 2.6	2.83 −.01	40.1 0.6	26.79 −.13	44.3 2.9	11.89 +.01	71.9 0.0
21.4	55.32 .18	76.1 2.5	2.80 .05	40.8 0.7	26.57 .30	47.1 2.7	11.88 −.03	72.0 +0.2
31.4	55.11 .26	78.5 2.2	2.74 .08	41.6 0.8	26.19 .45	49.7 2.5	11.83 .06	72.3 0.4
Apr. 10.4	54.82 .32	80.6 1.9	2.65 .10	42.4 0.9	25.69 .57	52.0 2.1	11.75 .09	72.7 0.5
20.3	54.48 .36	82.3 1.5	2.54 .12	43.3 0.8	25.07 .66	53.9 1.6	11.66 .10	73.2 0.5
30.3	54.10 .39	83.5 1.0	2.42 .12	44.1 0.8	24.38 .72	55.3 1.2	11.55 .11	73.7 0.6
May 10.3	53.71 .39	84.3 0.6	2.29 .12	44.8 0.7	23.65 .74	56.2 0.6	11.44 .11	74.3 0.6
20.3	53.32 .38	84.7 +0.1	2.17 .12	45.4 0.6	22.90 .75	56.6 +0.1	11.33 .11	74.9 0.6
30.2	52.95 .36	84.5 −0.4	2.06 .11	45.9 0.4	22.17 .72	56.4 −0.5	11.22 .10	75.5 0.6
June 9.2	52.60 .33	83.8 0.9	1.96 .09	46.2 0.3	21.46 .68	55.6 1.0	11.13 .09	76.0 0.5
19.2	52.30 .28	82.7 1.4	1.87 .08	46.5 +0.1	20.82 .61	54.4 1.5	11.04 .08	76.5 6.5
29.1	52.04 .23	81.1 1.8	1.81 .05	46.5 0.0	20.26 .52	52.6 2.0	10.98 .06	76.9 0.4
July 9.1	51.84 .17	79.2 2.1	1.76 .03	46.5 −0.2	19.79 .42	50.5 2.4	10.92 .04	77.3 0.3
19.1	51.70 .10	76.9 2.5	1.74 −.01	46.2 0.3	19.42 .31	47.9 2.7	10.89 −.02	77.5 0.2
29.1	51.63 −.04	74.3 2.7	1.75 +.02	45.8 0.5	19.16 .19	45.0 3.0	10.89 .00	77.7 +0.1
Aug. 8.0	51.63 +.03	71.5 2.9	1.77 .04	45.2 0.7	19.03 −.07	41.9 3.3	10.90 +.03	77.7 −0.1
18.0	51.70 .11	68.5 3.1	1.83 .07	44.5 0.8	19.03 +.06	38.5 3.4	10.94 .05	77.5 0.2
28.0	51.84 .18	65.3 3.2	1.92 .10	43.6 1.0	19.15 .19	35.0 3.5	11.01 .08	77.2 0.4
Sept. 7.0	52.05 .25	62.1 3.2	2.03 .13	42.5 1.2	19.41 .32	31.5 3.6	11.10 .11	76.7 0.6
16.9	52.34 .32	58.9 3.2	2.18 .17	41.2 1.4	19.79 .45	27.9 3.5	11.23 .14	76.0 0.8
26.9	52.70 .39	55.7 3.1	2.36 .20	39.7 1.5	20.31 .58	24.5 3.4	11.39 .19	75.1 1.0
Oct. 6.9	53.13 .46	52.6 3.0	2.58 .23	38.1 1.7	20.95 .70	21.1 3.2	11.58 .21	74.0 1.2
16.8	53.62 .53	49.8 2.8	2.83 .27	36.4 1.8	21.70 .82	18.0 3.0	11.81 .25	72.6 1.5
26.8	54.18 .58	47.1 2.5	3.11 .30	34.5 1.9	22.57 .92	15.2 2.6	12.07 .28	71.0 1.7
Nov. 5.8	54.79 .63	44.8 2.1	3.42 .32	32.6 2.0	23.53 1.00	12.7 2.2	12.36 .30	69.2 1.8
15.8	55.45 .67	42.9 1.7	3.76 .34	30.6 2.0	24.57 1.07	10.7 1.8	12.68 .33	67.3 2.0
25.7	56.13 .69	41.4 1.2	4.11 .36	28.6 1.9	25.66 1.11	9.2 1.2	13.01 .34	65.3 2.0
Dec. 5.7	56.82 .69	40.4 0.7	4.46 .36	26.7 1.8	26.78 1.12	8.3 0.7	13.36 .34	63.3 2.0
15.7	57.50 .67	40.0 −0.2	4.82 .35	25.0 1.7	27.89 1.10	7.9 −0.1	13.70 .34	61.3 2.0
25.7	58.16 .64	40.1 +0.4	5.16 .33	23.4 1.4	28.97 1.05	8.1 +0.5	14.03 .32	59.4 1.8
35.6	58.78 +.58	40.7 +0.9	5.48 +.30	22.2 −1.1	29.98 +.96	8.9 +1.1	14.35 +.30	57.6 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Argus.		ι Leonis.		α Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 10 40	° ′ 59 0	h m 10 42	° ′ 11 12	h m 10 55	° ′ 62 25	h m 11 7	° ′ 21 12
	s	″	s	″	s	″	s	″
Jan. 0.7	10.76 +.44	57.2 +2.9	38.05 +.32	43.1 −1.7	57.33 +.58	38.9 0.0	24.41 +.34	47.5 −1.5
10.6	11.18 .39	60.3 3.3	38.36 .29	41.4 1.5	57.90 .53	39.2 +0.6	24.74 .32	46.2 1.2
20.6	11.53 .32	63.7 3.5	38.63 .25	40.0 1.2	58.40 .47	40.1 1.1	25.04 .28	45.1 0.9
30.6	11.81 .24	67.4 3.7	38.86 .21	38.9 1.0	58.84 .40	41.4 1.6	25.31 .24	44.4 0.5
Feb. 9.6	12.02 .17	71.1 3.8	39.04 .16	38.1 0.7	59.20 .31	43.2 2.0	25.52 .19	44.1 −0.2
19.5	12.14 .09	74.9 3.7	39.18 .11	37.6 0.4	59.46 .22	45.4 2.3	25.69 .14	44.1 +0.2
Mar. 1.5	12.19 +.01	78.6 3.7	39.27 .07	37.3 −0.1	59.62 .12	47.8 2.5	25.81 .09	44.4 0.5
11.5	12.17 −.06	82.2 3.4	39.31 +.02	37.3 +0.1	59.69 +.02	50.4 2.6	25.88 .05	44.9 0.7
21.5	12.08 .12	85.5 3.2	39.31 −.02	37.5 0.3	59.67 −.07	53.0 2.6	25.91 +.01	45.7 0.9
31.4	11.93 .18	88.5 2.9	39.28 .05	37.9 0.4	59.56 .14	55.6 2.5	25.90 −.03	46.6 1.0
Apr. 10.4	11.73 .22	91.2 2.5	39.22 .07	38.4 0.5	59.39 .21	58.0 2.2	25.85 .06	47.6 1.0
20.4	11.49 .26	93.5 2.1	39.13 .09	38.9 0.6	59.15 .26	60.1 1.9	25.78 .08	48.7 1.0
30.3	11.22 .29	95.3 1.6	39.03 .10	39.6 0.6	58.87 .30	61.8 1.6	25.69 .10	49.7 1.0
May 10.3	10.92 .31	96.7 1.2	38.93 .11	40.2 0.6	58.55 .32	63.2 1.1	25.58 .11	50.7 0.9
20.3	10.61 .32	97.6 0.7	38.82 .11	40.8 0.6	58.22 .33	64.1 0.7	25.47 .11	51.6 0.8
30.3	10.29 .32	98.0 +0.2	38.71 .10	41.5 0.6	57.89 .33	64.5 +0.2	25.36 .11	52.3 0.6
June 9.2	9.97 .31	97.9 −0.3	38.62 .09	42.0 0.5	57.57 .31	64.4 −0.3	25.25 .11	52.8 0.5
19.2	9.67 .30	97.3 0.8	38.53 .08	42.5 0.4	57.27 .29	63.9 0.8	25.15 .10	53.2 0.3
29.2	9.38 .28	96.3 1.3	38.45 .07	42.9 0.3	57.00 .26	62.9 1.2	25.06 .08	53.4 +0.1
July 9.2	9.11 .25	94.8 1.7	38.39 .05	43.2 0.2	56.76 .21	61.5 1.7	24.98 .07	53.4 −0 1
19.1	8.88 .21	92.9 2.1	38.35 .03	43.4 +0.1	56.57 .17	59.6 2.0	24.92 .05	53.3 0.3
29.1	8.69 .16	90.7 2.4	38.33 −.01	43.4 0.0	56 43 .12	57.4 2.4	24.88 .03	52.9 0.5
Aug. 8.1	8.56 .11	88.1 2.6	38.33 +.01	43.4 −0.1	56.33 .07	54.8 2.7	24.85 −.01	52.3 0.7
18.0	8.47 −.05	85.4 2.8	38.35 .04	43.1 0.3	56.29 −.01	52.0 2 9	24.85 +.01	51.5 0.9
28.0	8.45 +.01	82.6 2.8	38.40 .07	42.7 0.5	56.31 +.05	49.0 3.1	24.88 .04	50.5 1.1
Sept. 7.0	8.50 .09	79.8 2.7	38.48 .10	42.1 0.7	56.40 .12	45.7 3.3	24.94 .07	49.3 1.3
17.0	8.62 .16	77.2 2.6	38.59 .13	41.3 0.9	56.55 .18	42.4 3.4	25.03 .11	47.9 1.5
26.9	8.82 .23	74.7 2.3	38.74 .16	40.3 1.1	56.77 .25	39.1 3.4	25.15 .14	46.2 1.7
Oct. 6.9	9.09 .30	72.6 1.9	38.92 .20	39.1 1.4	57.06 .32	35.7 3.3	25.31 .18	44.4 1.9
16.9	9.43 .37	71.0 1.4	39.13 .23	37.6 1.6	57.42 .39	32.4 3.2	25.51 .22	42.4 2.1
26.9	9.83 .43	69.8 0.9	39.38 .27	35.9 1.8	57.84 .45	29.3 3.0	25.75 .26	40.3 2.2
Nov. 5.8	10.28 .48	69.2 −0.3	39.66 .30	34.1 1.9	58.32 .51	26.5 2.7	26.03 .29	38.0 2.3
15.8	10.78 .51	69.3 +0.4	39.97 .32	32.1 2.0	58.86 .56	23.9 2.4	26.34 .32	35.8 2 3
25.8	11.30 .53	69.9 1.0	40.30 .34	30.1 2.1	59.44 .59	21.8 1.9	26.67 .34	33.5 2.2
Dec. 5.7	11.83 .53	71.2 1.6	40.65 .35	28.0 2.1	60.04 .62	20.0 1.5	27.02 .36	31.3 2.1
15.7	12.35 .51	73.1 2.2	40.99 .34	25.9 2.0	60.66 .62	18.8 0.9	27.38 .36	29.2 2.0
25.7	12.84 .48	75.5 2.7	41.33 .33	24.0 1.9	61.28 .60	18.2 −0.4	27.74 .35	27.4 1.7
35.7	13.29 +.42	78.4 +3.1	41.66 +.31	22.2 −1.7	61.87 +.57	18.1 +0.2	28.09 +.34	25.8 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Crateris.		τ Leonis.		*λ Draconis.		υ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	11 13	14 5	11 21	3 32	11 23	70 0	11 30	0 7
	s	″	s	″	s	″	s	″
Jan. 0.7	2.34 +.32	39.7 +2.5	27.29 +.33	62.9 −2.1	55.59 +.77	79.5 0.0	29.64 +.33	37.5 +2.1
10.7	2.65 .30	42.1 2.4	27.61 .30	60.8 1.9	56.34 .73	79.7 +0.5	29.96 .31	39.6 2.1
20.6	2.93 .26	44.6 2.4	27.90 .27	59.0 1.7	57.03 .67	80.5 1.1	30.25 .28	41.6 1.9
30.6	3.18 .22	46.9 2.3	28.15 .24	57.4 1.5	57.64 .56	81.8 1.6	30.51 .24	43.4 1.7
Feb. 9.6	3.38 .18	49.1 2.1	28.36 .19	56.1 1.2	58.16 .46	83.7 2.1	30.73 .20	44.9 1.4
19.6	3.53 .13	51.2 1.9	28.54 .15	55.0 0.9	58.55 .34	86.0 2.5	30.91 .15	46.2 1.1
Mar. 1.5	3.64 .09	53.0 1.7	28.66 .10	54.2 0.7	58.83 .21	88.6 2.7	31.04 .11	47.2 0.9
11.5	3.71 .05	54.6 1.5	28.74 .06	53.7 0.4	58.97 +.08	91.4 2.9	31.13 .07	48.0 0.6
21.5	3.74 +.01	55.9 1.2	28.78 +.02	53.4 −0.2	58.99 −.04	94.3 2.9	31.18 +.03	48.5 0.4
31.5	3.73 −.02	57.0 1.0	28.78 −.01	53.3 0.0	58.90 .15	97.1 2.7	31.19 .00	48.8 +0.2
Apr. 10.4	3.69 .05	57.8 0.7	28.75 .04	53.5 +0.2	58.70 .25	99.7 2.5	31.17 −.03	48.8 0.0
20.4	3.63 .07	58.4 0.5	28.70 .06	53.8 0.4	58.40 .33	102.1 2.2	31.13 .05	48.7 −0.2
30.4	3.55 .09	58.7 +0.2	28.63 .08	54.2 0.4	58.04 .40	104.2 1.9	31.07 .07	48.5 0.3
May 10.3	3.45 .10	58.9 0.0	28.55 .09	54.6 0.5	57.62 .44	105.8 1.4	30.99 .08	48.1 0.4
20.3	3.35 .10	58.8 −0.2	28.46 .09	55.2 0.6	57.16 .47	107.0 0.9	30.90 .09	47.7 0.5
30.3	3.25 .10	58.5 0.4	28.36 .10	55.7 0.6	56.68 .49	107.6 +0.4	30.81 .09	47.2 0.6
June 9.3	3.14 .10	58.0 0.6	28.26 .09	56.3 0.6	56.19 .48	107.8 −0.1	30.71 .09	46.6 0.6
19.2	3.04 .10	57.4 0.7	28.17 .09	56.9 0.6	55.72 .46	107.4 0.7	30.62 .09	46.0 0.6
29.2	2.95 .09	56.6 0.8	28.09 .08	57.5 0.6	55.28 .43	106.5 1.2	30.53 .08	45.4 0.6
July 9.2	2.86 .08	55.7 1.0	28.01 .07	58.0 0.5	54.87 .38	105.1 1.6	30.45 .08	44.8 0.6
19.2	2.79 .07	54.7 1.0	27.95 .06	58.5 0.4	54.52 .33	103.2 2.1	30.38 .06	44.2 0.5
29.1	2.73 .05	53.7 1.1	27.89 .04	58.9 0.3	54.22 .27	100.9 2.5	30.32 .05	43.7 0.5
Aug. 8.1	2.69 −.03	52.6 1.1	27.86 −.02	59.2 0.2	53.99 .20	98.2 2.8	30.28 .03	43.3 0.4
18.1	2.68 .00	51.5 1.0	27.85 .00	59.3 +0.1	53.83 .12	95.3 3.1	30.26 −.01	42.9 0.3
28.0	2.69 +.03	50.5 0.9	27.86 +.02	59.3 −0.1	53.75 −.04	92.1 3.4	30.26 +.01	42.7 −0.1
Sept. 7.0	2.73 .06	49.7 0.8	27.90 .05	59.1 0.3	53.75 +.05	88.6 3.5	30.29 .04	42.7 0.0
17.0	2.80 .09	49.0 0.6	27.97 .09	58.7 0.5	53.84 .14	85.0 3.6	30.35 .08	42.8 +0.3
27.0	2.91 .13	48.5 −0.3	28.07 .12	58.1 0.7	54.03 .23	81.4 3.7	30.44 .11	43.2 0.5
Oct. 6.9	3.06 .17	48.4 0.0	28.21 .16	57.3 1.0	54.31 .33	77.7 3.6	30.57 .15	43.9 0.8
16.9	3.25 .21	48.6 +0.4	28.39 .20	56.2 1.3	54.69 .42	74.1 3.5	30.74 .19	44.8 1.1
26.9	3.48 .25	49.1 0.7	28.60 .24	54.8 1.5	55.16 .51	70.7 3.3	30.95 .23	46.0 1.3
Nov. 5.8	3.74 .28	50.0 1.1	28.86 .27	53.1 1.7	55.71 .60	67.6 3.0	31.20 .27	47.5 1.6
15.8	4.04 .31	51.2 1.4	29.15 .30	51.3 1.9	56.35 .67	64.7 2.6	31.48 .30	49.2 1.8
25.8	4.36 .33	52.8 1.8	29.46 .32	49.3 2.1	57.05 .73	62.3 2.2	31.79 .32	51.2 2.0
Dec. 5.8	4.70 .34	54.7 2.0	29.79 .34	47.1 2.2	57.81 .77	60.4 1.7	32.12 .34	53.2 2.1
15.7	5.05 .34	56.9 2.2	30.13 .34	44.9 2.2	58.59 .79	59.0 1.1	32.46 .34	55.4 2.2
25.7	5.39 .34	59.2 2.4	30.47 .34	42.8 2.1	59.38 .78	58.2 −0.5	32.80 .34	57.6 2.2
35.7	5.72 +.32	61.6 +2.5	30.80 +.32	40.7 −2.0	60.15 +.75	58.0 +0.1	33.14 +.32	59.8 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Leonis.		γ Ursæ Majoris.		ο Virginis.		*4 Draconis (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 11 42	° ′ 15 16	h m 11 47	° ′ 54 23	h m 11 58	° ′ 9 25	h m 12 6	° ′ 78 18
	s	″	s	″	s	″	s	″
Jan. 0.7	37.71 +.34	34.0 −1.9	12.11 +.50	30.6 −0.9	47.12 +.34	58.6 −2.1	18.88+1.23	41.8 −0.5
10.7	38.04 .32	32.2 1.6	12.60 .46	30.0 −0.3	47.45 .32	56.7 1.8	20.10 1.20	41.6 +0.2
20.7	38.36 .29	30.8 1.3	13.07 .44	30.0 +0.3	47.76 .30	54.9 1.6	21.26 1.12	42.1 0.8
30.6	38.63 .26	29.6 1.0	13.48 .39	30.5 0.8	48.04 .27	53.5 1.3	22.33 1.01	43.2 1.4
Feb 9.6	38.87 .22	28.8 0.6	13.85 .33	31.6 1.3	48.29 .23	52.4 1.0	23.27 .86	44.9 2.0
19.6	39.06 .17	28.4 −0.3	14.14 .26	33.1 1.7	48.50 .18	51.5 0.7	24.05 .69	47.1 2.4
Mar 1.6	39.21 .13	28.2 0.0	14.36 .18	35.0 2.1	48.66 .14	51.0 −0.3	24.64 .49	49.7 2.7
11.5	39.32 .08	28.4 +0.3	14.51 .11	37.2 2.3	48.78 .10	50.9 0.0	25.03 .29	52.5 2.9
21.5	39.38 +.04	28.8 0.5	14.59 +.04	39.6 2.5	48.86 .06	50.9 +0.2	25.21 +.08	55.5 3.0
31.5	39.40 .00	29.4 0.7	14.59 −.03	42.1 2.5	48.90 +.02	51.2 0.4	25.19 −.12	58.5 3.0
Apr. 10.4	39.39 −.03	30.2 0.8	14.54 .08	44.6 2.4	48.90 −.01	51.7 0.6	24.98 .31	61.5 2.9
20.4	39.35 .05	31.1 0.9	14.43 .13	46.9 2.2	48.88 .03	52.3 0.7	24.58 .47	64.2 2.6
30.4	39.29 .07	32.0 0.9	14.27 .17	49.0 2.0	48.84 .05	53.0 0.7	24.04 .61	66.6 2.2
May 10.4	39.21 .09	33.0 0.9	14.08 .20	50.8 1.7	48.77 .07	53.8 0.8	23.36 .73	68.7 1.8
20.3	39.12 .10	33.9 0.8	13.86 .22	52.3 1.3	48.70 .08	54.6 0.8	22.59 .82	70.2 1.3
30.3	39.02 .10	34.7 0.7	13.63 .24	53.4 0.9	48.61 .09	55.3 0.7	21.74 .87	71.3 0.8
June 9.3	38.92 .10	35.4 0.6	13.40 .24	54.0 +0.4	48.52 .09	56.0 0.7	20.85 .90	71.8 +0.3
19.3	38.83 .10	35.9 0.5	13.16 .23	54.2 0.0	48.42 .09	56.6 0.6	19.95 .90	71.8 −0.3
29.2	38.73 .09	36.4 0.4	12.93 .22	54.0 −0.5	48.33 .09	57.2 0.5	19.06 .88	71.2 0.9
July 9.2	38.64 .09	36.7 +0.2	12.72 .20	53.2 0.9	48.24 .09	57.6 0.4	18.20 .83	70.1 1.4
19.2	38.56 .07	36.8 0.0	12.53 .18	52.1 1.4	48.16 .08	57.9 0.2	17.40 .77	68.4 1.9
29.1	38.49 .06	36.7 −0.2	12.36 .15	50.6 1.7	48.08 .07	58.1 +0.1	16.67 .68	66.3 2.3
Aug. 8.1	38.44 .04	36.5 0.4	12.22 .12	48.6 2.1	48.02 .05	58.1 −0.1	16.04 .58	63.8 2.7
18.1	38.41 −.02	36.0 0.5	12.12 .08	46.3 2.4	47.98 .04	58.0 0.3	15.52 .46	60.9 3.1
28.1	38.40 .00	35.3 0.8	12.06 −.04	43.7 2.7	47.95 −.01	57.6 0.4	15.12 .33	57.6 3.4
Sept. 7.0	38.42 +.03	34.5 1.0	12.05 +.01	40.9 3.0	47.95 +.02	57.1 0.6	14.85 .19	54.1 3.6
17.0	38.46 .07	33.4 1.2	12.09 .06	37.8 3.2	47.99 .05	56.3 0.9	14.73 −.04	50.4 3.8
27.0	38.55 .10	32.0 1.5	12.18 .12	34.5 3.3	48.05 .08	55.4 1.1	14.77 +.11	46.5 3.9
Oct. 7.0	38.67 .14	30.5 1.7	12.33 .18	31.2 3.4	48.15 .12	54.1 1.3	14.96 .28	42.6 3.9
16.9	38.83 .18	28.7 1.9	12.54 .24	27.8 3.4	48.30 .16	52.7 1.6	15.32 .44	38.8 3.8
26.9	39.03 .22	26.7 2.1	12.81 .30	24.4 3.3	48.48 .21	51.0 1.8	15.85 .61	35.1 3.6
Nov. 5.9	39.27 .26	24.6 2.2	13.14 .36	21.2 3.2	48.71 .25	49.1 2.0	16.53 .76	31.6 3.4
15.8	39.55 .29	22.3 2.3	13.52 .41	18.1 2.9	48.97 .28	47.0 2.2	17.37 .91	28.4 3.0
25.8	39.86 .32	20.0 2.3	13.96 .45	15.3 2.6	49.27 .31	44.8 2.3	18.34 1.03	25.5 2.6
Dec. 5.8	40.19 .34	17.7 2.3	14.43 .49	12.9 2.2	49.59 .33	42.5 2.3	19.42 1.13	23.2 2.1
15.8	40.53 .35	15.5 2.2	14.92 .50	10.9 1.8	49.93 .34	40.3 2.3	20.59 1.20	21.4 1.5
25.7	40.88 .35	13.3 2.0	15.43 .51	9.4 1.2	50.27 .34	38.0 2.2	21.81 1.23	20.2 0.9
35.7	41.23 +.34	11.4 −1.8	15.94 +.49	8.4 −0.7	50.62 +.34	35.9 −2.0	23.02+1.22	19.6 −0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Chamæleontis.		η Virginis.		α^1 Crucis.		β Corvi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$12^h\ 10^m$	$78^\circ\ 36'$	$12^h\ 13^m$	$0^\circ\ 1'$	$12^h\ 19^m$	$62^\circ\ 23'$	$12^h\ 27^m$	$22^\circ\ 41'$
	s	″	s	″	s	″	s	″
Jan. 0.7	57.36 +1.20	22.6 +1.6	27.12 +.34	64.0 −2.2	34.52 +.59	36.9 +1.8	45.53 +.36	47.2 +2.2
10.7	58.53 1.13	24.5 2.1	27.45 .32	61.8 2.1	35.09 .56	39.0 2.3	45.88 .34	49.5 2.3
20.7	59.61 1.03	26.9 2.6	27.76 .30	59.8 1.9	35.63 .51	41.5 2.7	46.21 .32	51.9 2.4
30.6	60.57 .90	29.8 3.1	28.05 .27	58.0 1.7	36.11 .46	44.4 3.1	46.52 .29	54.4 2.4
Feb. 9.6	61.40 .75	33.0 3.4	28.30 .23	56.4 1.5	36.54 .39	47.6 3.3	46.79 .25	56.8 2.4
19.6	62.07 .59	36.6 3.7	28.52 .19	55.1 1.2	36.89 .32	51.0 3.5	47.03 .21	59.1 2.3
Mar. 1.6	62.58 .42	40.3 3.8	28.69 .15	54.0 0.9	37.17 .24	54.5 3.6	47.22 .17	61.4 2.1
11.5	62.92 .25	44.2 3.9	28.82 .11	53.2 0.6	37.38 .17	58.1 3.6	47.37 .13	63.4 2.0
21.5	63.09 +.09	48.1 3.9	28.92 .07	52.7 0.4	37.51 .10	61.7 3.5	47.48 .09	65.3 1.8
31.5	63.10 −.08	51.9 3.8	28.97 .04	52.4 −0.2	37.57 +.02	65.2 3.4	47.55 .05	66.9 1.5
Apr. 10.4	62.94 .23	55.6 3.6	28.99 +.01	52.4 0.0	37.56 −.04	68.5 3.2	47.59 +.02	68.3 1.3
20.4	62.63 .38	59.1 3.4	28.99 −.02	52.5 +0.2	37.49 .10	71.5 2.9	47.59 −.01	69.5 1.1
30.4	62.19 .51	62.3 3.1	28.96 .04	52.8 0.3	37.37 .15	74.3 2.6	47.57 .03	70.4 0.8
May 10.4	61.61 .63	65.2 2.7	28.91 .06	53.2 0.4	37.19 .20	76.7 2.2	47.53 .05	71.2 0.6
20.3	60.93 .74	67.7 2.2	28.85 .07	53.6 0.5	36.96 .24	78.8 1.8	47.47 .07	71.6 0.4
30.3	60.15 .82	69.7 1.8	28.77 .08	54.2 0.6	36.70 .28	80.4 1.4	47.39 .09	71.9 +0.1
June 9.3	59.29 .89	71.2 1.3	28.68 .09	54.8 0.6	36.41 .31	81.6 0.9	47.30 .10	71.9 −0.1
19.3	58.37 .93	72.2 0.7	28.60 .09	55.4 0.6	36.09 .33	82.3 +0.5	47.20 .11	71.7 0.3
29.2	57.43 .95	72.6 +0.2	28.50 .09	55.9 0.6	35.76 .34	82.5 0.0	47.09 .11	71.3 0.5
July 9.2	56.48 .94	72.5 −0.4	28.41 .09	56.5 0.6	35.42 .34	82.2 −0.5	46.98 .11	70.7 0.7
19.2	55.55 .91	71.9 0.9	28.33 .08	57.0 0.5	35.09 .33	81.4 1.0	46.87 .11	69.9 0.9
29.1	54.67 .84	70.7 1.4	28.25 .08	57.5 0.4	34.77 .31	80.2 1.4	46.76 .10	69.0 1.0
Aug. 8.1	53.87 .75	69.1 1.9	28.17 .06	57.9 0.3	34.48 .27	78.5 1.8	46.66 .09	67.9 1.1
18.1	53.18 .63	67.0 2.3	28.12 .05	58.2 0.2	34.23 .23	76.5 2.2	46.58 .07	66.8 1.2
28.1	52.63 .47	64.5 2.6	28.08 −.03	58.3 +0.1	34.02 .17	74.2 2.4	46.52 .05	65.6 1.2
Sept. 7.0	52.24 .30	61.8 2.8	28.07 .00	58.3 −0.1	33.88 .10	71.7 2.6	46.48 −.02	64.5 1.1
17.0	52.03 −.11	58.8 3.0	28.08 +.03	58.1 0.3	33.82 −.02	69.1 2.7	46.47 +.01	63.4 1.0
27.0	52.02 +.10	55.9 3.0	28.13 .07	57.7 0.4	33.84 +.06	66.4 2.6	46.51 .06	62.5 0.8
Oct. 7.0	52.23 .31	52.9 2.9	28.22 .11	57.0 0.8	33.95 .15	63.9 2.5	46.59 .10	61.8 0.6
16.9	52.63 .51	50.2 2.6	28.35 .15	56.1 1.1	34.14 .24	61.5 2.2	46.71 .15	61.4 −0.3
26.9	53.24 .71	47.7 2.3	28.52 .19	54.9 1.3	34.43 .33	59.5 1.8	46.88 .19	61.2 0.0
Nov. 5.9	54.04 .88	45.7 1.8	28.74 .23	53.5 1.6	34.81 .41	57.8 1.4	47.10 .24	61.4 +0.4
15.8	55.00 1.03	44.1 1.3	28.99 .27	51.8 1.8	35.26 .48	56.7 0.9	47.36 .28	62.0 0.8
25.8	56.08 1.14	43.1 0.7	29.28 .30	49.8 2.0	35.77 .54	56.1 −0.3	47.66 .32	63.0 1.2
Dec. 5.8	57.26 1.21	42.7 −0.1	29.59 .32	47.7 2.2	36.33 .58	56.1 +0.3	47.99 .34	64.4 1.5
15.8	58.49 1.24	42.9 +0.6	29.92 .34	45.6 2.2	36.92 .60	56.7 0.9	48.34 .36	66.0 1.8
25.7	59.74 1.24	43.8 1.2	30.27 .34	43.3 2.2	37.53 .60	57.9 1.5	48.70 .36	68.0 2.1
35.7	60.95 +1.19	45.3 +1.8	30.61 +.34	41.1 −2.2	38.12 +.58	59.6 +2.0	49.06 +.36	70.2 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*κ Draconis.		*32 Camelop. (foll.)		12 Can. Venaticorum.		θ Virginis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 12 28	° ′ 70 28	h m 12 48	° ′ 84 5	h m 12 50	° ′ 38 59	h m 13 3	° ′ 4 51
	s	″	s	″	s	″	s	″
Jan. 0.8	6.53 +.79	41.1 −1.0	16.88+2.26	33.1 −0.9	7.52 +.40	46.6 −2.3	24.85 +.34	53.4 +2.1
10.7	7.31 .78	40.5 −0.3	19.15 2.27	32.5 −0.3	7.92 .40	45.0 1.4	25.19 .33	55.5 2.1
20.7	8.08 .74	40.5 +0.3	21.40 2.21	32.5 +0.4	8.31 .38	43.8 0.9	25.52 .32	57.6 2.0
30.7	8.79 .68	41.1 0.9	23.55 2.07	33.2 1.0	8.68 .35	43.2 −0.4	25.83 .30	59.6 1.9
Feb. 9.6	9.42 .59	42.3 1.5	25.51 1.85	34.6 1.6	9.02 .32	43.1 +0.2	26.11 .27	61.4 1.7
19.6	9.97 .49	44.1 2.0	27.22 1.56	36.4 2.1	9.31 .27	43.5 0.7	26.37 .23	63.0 1.4
Mar. 1.6	10.41 .38	46.3 2.4	28.62 1.23	38.8 2.5	9.56 .22	44.3 1.1	26.58 .20	64.3 1.2
11.6	10.72 .26	48.9 2.7	29.67 .85	41.5 2.9	9.76 .17	45.6 1.5	26.76 .16	65.3 0.9
21.5	10.92 .13	51.7 2.9	30.32 .46	44.4 3.0	9.90 .12	47.3 1.8	26.91 .13	66.1 0.7
31.5	10.99 +.01	54.6 3.0	30.58 +.06	47.5 3.1	10.00 .07	49.2 2.0	27.02 .09	66.7 0.4
Apr. 10.5	10.94 −.10	57.5 2.9	30.44 −.33	50.6 3.0	10.05 +.03	51.2 2.1	27.09 .06	67.0 +0.2
20.5	10.79 .20	60.3 2.7	29.93 .70	53.5 2.8	10.05 −.02	53.4 2.1	27.13 +.03	67.1 0.0
30.4	10.53 .30	62.9 2.4	29.06 1.03	56.2 2.5	10.02 .05	55.5 2.1	27.15 .00	67.1 −0.1
May 10.4	10.20 .37	65.2 2.1	27.89 1.31	58.5 2.2	9.95 .08	57.5 1.9	27.14 −.02	66.9 0.2
20.4	9.80 .43	67.1 1.7	26.46 1.55	60.5 1.7	9.85 .11	59.3 1.7	27.11 .04	66.6 0.4
30.3	9.35 .47	68.5 1.2	24.82 1.73	62.0 1.2	9.74 .13	60.9 1.4	27.06 .06	66.2 0.4
June 9.3	8.86 .50	69.4 0.7	23.02 1.85	62.9 0.7	9.61 .14	62.2 1.1	27.00 .07	65.7 0.5
19.3	8.36 .51	69.8 +0.1	21.13 1.93	63.3 +0.1	9.46 .15	63.1 0.8	26.92 .08	65.2 0,5
29.3	7.85 .51	69.7 −0.4	19.19 1.94	63.2 −0.4	9.31 .16	63.7 0.4	26.84 .09	64.7 0.5
July 9.2	7.35 .49	69.0 0.9	17.26 1.91	62.5 1.0	9.15 .16	63.9 +0.1	26.74 .10	64.2 0.6
19.2	6.87 .46	67.9 1.4	15.38 1.83	61.2 1.5	8.99 .15	63.8 −0.3	26.64 .10	63.6 0.6
29.2	6.43 .42	66.2 1.9	13.60 1.72	59.5 2.0	8.84 .15	63.3 0.7	26.54 .10	63.0 0.5
Aug. 8.2	6.03 .36	64.1 2.3	11.96 1.56	57.2 2.5	8.70 .13	62.3 1.1	26.44 .09	62.6 0.5
18.1	5.69 .31	61.5 2.7	10.49 1.36	54.5 2.9	8.58 .11	61.0 1.5	26.35 .08	62.1 0.4
28.1	5.41 .24	58.6 3.1	9.24 1.14	51.5 3.2	8.48 .09	59.4 1.8	26.28 .07	61.8 0.3
Sept. 7.1	5.21 .16	55.4 3.4	8.23 .88	48.1 3.5	8.40 .06	57.5 2.1	26.22 .05	61.6 −0.1
17.0	5.09 −.07	51.9 3.6	7.48 .60	44.5 3.7	8.35 −.02	55.2 2.4	26.19 −.02	61.5 0.0
27.0	5.06 +.02	48.2 3.8	7.03 −.30	40.7 3.9	8.35 +.02	52.6 2.7	26.19 +.02	61.7 +0.2
Oct. 7.0	5.13 .12	44.4 3.8	6.89 + 02	36.7 3.9	8.39 .06	49.8 2.9	26.23 .06	62.0 0.5
17.0	5.31 .23	40.6 3.8	7.06 .35	32.8 3.9	8.48 .11	46.8 3.1	26.31 .10	62.6 0.7
26.9	5.59 .33	36.8 3.7	7.58 .68	28.9 3.8	8.62 .17	43.7 3.2	26.44 .15	63.5 1.0
Nov. 5.9	5.98 .44	33.1 3.6	8.42 1.01	25.2 3.6	8.81 .22	40.5 3.2	26.61 .19	64.6 1.3
15.9	6.46 .54	29.6 3.3	9.59 1.32	21.7 3.3	9.06 .27	37.3 3.2	26.82 .24	66.0 1.5
25.9	7.04 .62	26.5 2.9	11.06 1.61	18.5 3.0	9.35 .32	34.2 3.0	27.08 .28	67.6 1.8
Dec. 5.8	7.70 .70	23.8 2.5	12.80 1.86	15.8 2.5	9.69 .35	31.3 2.8	27.37 .31	69.5 2.0
15.8	8.43 .75	21.5 2.0	14.76 2.06	13.6 2.0	10.06 .38	28.6 2.6	27.69 .33	71.5 2.1
25.8	9.19 .78	19.8 1.4	16.90 2.19	11.9 1.3	10.45 .40	26.2 2.2	28.03 .34	73.6 2.2
35.7	9.97 +.78	18.7 −0.7	19.13+2.26	10.9 −0.9	10.85 +.40	24.2 −1.7	28.37 +.34	75.8 +2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis. (*Spica*.)		ζ Virginis.		η Ursæ Majoris.		η Bootis.	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 13 18	° ′ 10 30	h m 13 28	° ′ 0 2	h m 13 42	° ′ 49 55	h m 13 48	° ′ 19 1
	s	″	s	″	s	″	s	″
Jan. 0.8	32.47 +.35	5.7 +2.1	15.51 +.34	57.8 −2.2	33.86 +.44	79.1 −2.3	40.26 +.34	42.8 −2.4
10.8	32.82 .34	7.8 2.1	15.84 .34	55.6 2.1	34.30 .45	77.1 1.7	40.60 .35	40.6 2.1
20.7	33.15 .33	9.9 2.1	16.18 .33	53.6 1.9	34.75 .45	75.7 1.2	40.95 .34	38.6 1.8
30.7	33.47 .31	11.9 2.0	16.49 .31	51.7 1.7	35.19 .43	74.8 −0.5	41.28 .33	37.1 1.4
Feb. 9.7	33.77 .28	13.8 1.8	16.79 .28	50.1 1.5	35.61 .40	74.6 +0.1	41.60 .30	35.9 1.0
19.7	34.03 .25	15.6 1.7	17.06 .25	48.8 1.2	35.99 .37	75.0 0.7	41.89 .28	35.2 0.5
Mar. 1.6	34.26 .21	17.2 1.4	17.29 .22	47.7 0.9	36.33 .31	75.9 1.2	42.15 .24	34.8 −0.1
11.6	34.46 .18	18.5 1.2	17.50 .18	46.9 0.6	36.62 .26	77.4 1.7	42.37 .21	35.0 +0.3
21.6	34.62 .14	19.6 1.0	17.66 .15	46.4 0.4	36.85 .20	79.3 2.1	42.56 .17	35.5 0.7
31.5	34.74 .11	20.5 0.8	17.79 .11	46.1 −0.1	37.03 .15	81.5 2.4	42.71 .13	36.3 1.0
Apr. 10.5	34.83 .08	21.1 0.6	17.89 .08	46.1 +0.1	37.14 .09	84.0 2.6	42.83 .10	37.4 1.2
20.5	34.89 .05	21.6 0.4	17.95 .05	46.3 0.3	37.20 +.03	86.6 2.6	42.91 .06	38.7 1.4
30.5	34.92 +.02	21.9 +0.2	17.99 +.03	46.7 0.4	37.21 −.02	89.2 2.6	42.96 +.03	40.1 1.5
May 10.4	34.93 −.01	22.0 0.0	18.00 .00	47.2 0.5	37.17 .06	91.8 2.5	42.98 .00	41.6 1.5
20.4	34.91 .03	21.9 −0.1	17.99 −.02	47.7 0.6	37.08 .10	94.2 2.3	42.97 −.02	43.0 1.5
30.4	34.88 .04	21.8 0.2	17.96 .04	48.4 0.6	36.96 .14	96.3 2.0	42.94 .04	44.5 1.4
June 9.4	34.83 .06	21.5 0.3	17.91 .06	49.0 0.6	36.81 .17	98.2 1.6	42.88 .06	45.8 1.2
19.3	34.75 .08	21.2 0.4	17.84 .07	49.6 0.6	36.62 .19	99.6 1.3	42.81 .08	46.9 1.1
29.3	34.67 .09	20.7 0.5	17.76 .09	50.3 0.6	36.42 .21	100.7 0.8	42.71 .10	47.9 0.9
July 9.3	34.57 .10	20.2 0.5	17.67 .10	50.9 0.6	36.20 .23	101.3 +0.4	42.61 .11	48.7 0.6
19.2	34.47 .11	19.7 0.6	17.57 .10	51.4 0.5	35.97 .23	101.4 −0.1	42.49 .12	49.2 0.4
29.2	34.36 .11	19.1 0.6	17.46 .11	51.8 0.4	35.74 .23	101.1 0.5	42.37 .13	49.4 +0.1
Aug. 8.2	34.25 .11	18.5 0.6	17.35 .11	52.2 0.3	35.50 .23	100.4 1.0	42.24 .13	49.4 −0.1
18.2	34.15 .10	17.9 0.6	17.25 .10	52.5 +0.2	35.28 .21	99.2 1.4	42.11 .12	49.1 0.4
28.1	34.06 .08	17.4 0.5	17.16 .08	52.6 0.0	35.08 .19	97.5 1.9	42.00 .11	48.6 0.7
Sept. 7.1	33.99 .06	16.9 0.4	17.08 .07	52.6 −0.1	34.90 .16	95.4 2.3	41.90 .09	47.8 1.0
17.1	33.95 −.03	16.6 0.3	17.03 .04	52.4 0.3	34.75 .13	93.0 2.6	41.82 .07	46.6 1.3
27.1	33.93 .00	16.4 −0.1	17.01 −.01	52.0 0.5	34.65 .08	90.2 2.9	41.76 −.04	45.2 1.5
Oct. 7.0	33.96 +.05	16.4 +0.1	17.02 +.03	51.3 0.7	34.59 −.03	87.1 3.2	41.75 .03	43.6 1.8
17.0	34.02 .09	16.7 0.4	17.07 .08	50.5 1.0	34.59 +.03	83.8 3.4	41.77 +.05	41.6 2.1
27.0	34.14 .14	17.2 0.6	17.17 .12	49.4 1.2	34.65 .09	80.2 3.6	41.84 .10	39.4 2.3
Nov. 5.9	34.30 .18	17.9 0.9	17.32 .17	48.0 1.5	34.78 .16	76.6 3.6	41.96 .14	37.0 2.5
15.9	34.51 .23	19.0 1.2	17.51 .21	46.4 1.7	34.97 .22	73.0 3.6	42.13 .19	34.4 2.6
25.9	34.76 .27	20.3 1.5	17.74 .25	44.5 1.9	35.23 .29	69.4 3.5	42.34 .24	31.7 2.7
Dec. 5.9	35.04 .30	21.9 1.7	18.01 .29	42.5 2.1	35.54 .34	66.0 3.3	42.60 .28	29.0 2.7
15.8	35.36 .33	23.7 1.9	18.32 .32	40.4 2.2	35.90 .38	62.9 2.9	42.89 .31	26.3 2.7
25.8	35.69 .34	25.7 2.0	18.64 .33	38.2 2.2	36.31 .42	60.1 2.6	43.22 .33	23.7 2.5
35.8	36.04 +.35	27.7 +2.1	18.98 +.34	36.1 −2.2	36.75 +.46	57.8 −2.1	43.56 +.34	21.3 −2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Centauri.		*α Draconis.		α Bootis. (*Arcturus.*)		θ Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 13 54	° ′ 59 45	h m 14 0	° ′ 64 58	h m 14 9	° ′ 19 49	h m 14 20	° ′ 52 25
	s	″	s	″	s	″	s	″
Jan. 0.8	54.52 +.57	33.6 +0.6	58.08 +.62	23.5 −2.4	53.86 +.34	75.3 −2.5	53.46 +.42	46.7 −2.6
10.8	55.10 .58	34.5 1.1	58.68 .63	21.5 1.7	54.20 .34	72.9 2.2	53.90 .45	44.3 2.1
20.8	55.67 .57	35.9 1.6	59.29 .62	20.1 1.0	54.54 .34	70.9 1.9	54.35 .46	42.5 1.5
30.7	56.23 .55	37.7 2.0	59.91 .61	19.4 −0.4	54.87 .33	69.2 1.5	54.81 .45	41.3 0.9
Feb. 9.7	56.76 .51	39.8 2.3	60.51 .58	19.3 +0.3	55.19 .31	67.9 1.1	55.25 .43	40.7 −0.3
19.7	57.25 .47	42.3 2.5	61.06 .53	19.9 0.9	55.49 .29	67.0 0.6	55.68 .41	40.7 +0.4
Mar. 1.7	57.69 .41	45.0 2.9	61.56 .47	21.1 1.5	55.76 .26	66.6 −0.2	56.06 .36	41.4 1.0
11.6	58.08 .36	48.0 3.0	61.99 .40	22.9 2.0	56.00 .22	66.7 +0.3	56.40 .31	42.6 1.5
21.6	58.40 .30	51.0 3.1	62.34 .31	25.1 2.4	56.21 .19	67.2 0.6	56.69 .26	44.4 1.9
31.6	58.67 .24	54.1 3.1	62.61 .22	27.7 2.7	56.38 .15	68.0 1.0	56.92 .20	46.5 2.3
Apr. 10.5	58.88 .18	57.2 3.1	62.78 .13	30.6 2.9	56.51 .12	69.0 1.2	57.10 .14	49.0 2.7
20.5	59.03 .12	60.3 3.0	62.86 +.04	33.5 3.0	56.61 .08	70.3 1.4	57.21 .09	51.7 2.8
30.5	59.12 +.06	63.2 2.8	62.86 −.04	36.5 2.9	56.68 .05	71.8 1.5	57.27 +.03	54.5 2.8
May 10.5	59.14 .00	65.9 2.6	62.78 .12	39.4 2.8	56.71 +.02	73.3 1.6	57.27 −.02	57.2 2.7
20.4	59.12 −.05	68.4 2.4	62.62 .19	42.1 2.6	56.72 −.01	74.9 1.5	57.22 .07	59.9 2.6
30.4	59.04 .11	70.6 2.1	62.40 .25	44.5 2.2	56.70 .03	76.4 1.5	57.13 .12	62.3 2.3
June 9.4	58.90 .16	72.5 1.7	62.12 .31	46.5 1.8	56.66 .06	77.7 1.3	56.99 .16	64.5 2.0
19.4	58.72 .20	74.1 1.4	61.79 .35	48.1 1.4	56.59 .08	79.0 1.2	56.81 .19	66.4 1.7
29.3	58.50 .24	75.3 1.0	61.42 .39	49.3 0.9	56.50 .10	80.0 0.9	56.61 .22	67.8 1.2
July 9.3	58.24 .27	76.0 0.5	61.02 .41	49.9 +0.4	56.40 .11	80.9 0.7	56.37 .25	68.8 0.8
19.3	57.96 .30	76.3 +0.1	60.60 .42	50.0 −0.1	56.28 .13	81.5 0.5	56.12 .26	69.4 +0.3
29.2	57.66 .31	76.1 −0.4	60.18 .42	49.6 0.6	56.14 .13	81.8 +0.2	55.85 .27	69.5 −0.2
Aug. 8.2	57.35 .31	75.5 0.8	59.76 .42	48.7 1.1	56.01 .14	81.8 −0.1	55.58 .27	69.1 0.6
18.2	57.04 .30	74.5 1.2	59.35 .40	47.3 1.6	55.87 .14	81.6 0.4	55.31 .27	68.2 1.1
28.2	56.76 .27	73.1 1.6	58.97 .37	45.5 2.1	55.74 .13	81.1 0.7	55.05 .25	66.8 1.6
Sept. 7.1	56.51 .23	71.4 1.9	58.63 .32	43.1 2.5	55.61 .11	80.2 1.0	54.80 .23	65.0 2.0
17.1	56.31 .17	69.3 2.1	58.33 .27	40.4 2.9	55.51 .09	79.1 1.3	54.59 .19	62.8 2.4
27.1	56.17 .10	67.1 2.3	58.09 .21	37.3 3.3	55.44 .06	77.7 1.6	54.42 .15	60.1 2.8
Oct. 7.1	56.10 −.02	64.7 2.4	57.92 .13	33.9 3.5	55.40 −.02	76.0 1.8	54.29 .10	57.2 3.2
17.0	56.12 +.06	62.4 2.3	57.83 −.05	30.2 3.7	55.40 +.02	74.0 2.1	54.22 −.04	53.9 3.4
27.0	56.23 .15	60.1 2.2	57.82 +.04	26.4 3.9	55.44 .07	71.8 2.4	54.21 +.02	50.4 3.6
Nov. 6.0	56.43 .24	58.0 1.9	57.91 .13	22.5 3.9	55.54 .12	69.3 2.6	54.26 .09	46.7 3.7
15.9	56.71 .33	56.3 1.6	58.09 .23	18.6 3.9	55.68 .17	66.7 2.7	54.39 .16	43.0 3.7
25.9	57.08 .41	54.9 1.2	58.37 .32	14.9 3.7	55.87 .22	63.9 2.8	54.59 .23	39.3 3.7
Dec. 5.9	57.53 .48	53.9 0.7	58.74 .41	11.3 3.4	56.11 .26	61.1 2.8	54.85 .30	35.6 3.5
15.9	58.03 .53	53.4 −0.2	59.19 .49	8.0 3.1	56.38 .29	58.3 2.8	55.18 .36	32.2 3.3
25.8	58.57 .56	53.5 +0.3	59.71 .55	5.2 2.6	56.69 .32	55.5 2.6	55.56 .40	29.1 2.9
35.8	59.14 +.58	54.0 +0.8	60.28 +.59	2.8 −2.1	57.03 +.33	53.0 −2.4	55.98 +.44	26.4 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*5 Ursæ Minoris.		α^2 Centauri.		ε Bootis.		α^2 Libræ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 14 27	° ′ 76 14	h m 14 31	° ′ 60 18	h m 14 39	° ′ 27 35	h m 14 43	° ′ 15 30
	s	″	s	″	s	″	s	″
Jan. 0.8	47.82 +.87	62.0 −2.4	1.58 +.56	25.2 +0.1	27.94 +.32	73.7 −2.6	53.11 +.33	57.0 +1.6
10.8	48.74 .95	59.9 1.8	2.14 .57	25.6 0.6	28.27 .34	71.2 2.3	53.44 .34	58.7 1.7
20.8	49.71 1.00	58.4 1.2	2.72 .58	26.4 1.1	28.62 .35	69.1 1.9	53.79 .34	60.4 1.7
30.7	50.72 1.01	57.5 −0.5	3.29 .56	27.7 1.5	28.97 .35	67.4 1.5	54.13 .34	62.2 1.7
Feb. 9.7	51.72 .98	57.4 +0.2	3.84 .54	29.3 1.9	29.31 .33	66.1 1.0	54.46 .32	63.9 1.7
19.7	52.67 .92	57.9 0.8	4.37 .51	31.4 2.2	29.64 .31	65.4 −0.5	54.78 .31	65.5 1.5
Mar. 1.7	53.55 .83	59.1 1.4	4.86 .46	33.7 2.4	29.94 .29	65.2 0.0	55.07 .28	66.9 1.4
11.6	54.33 .71	60.8 2.0	5.30 .41	36.2 2.7	30.21 .25	65.5 +0.5	55.34 .25	68.2 1.2
21.6	54.98 .58	63.0 2.4	5.68 .36	38.9 2.8	30.45 .22	66.2 1.0	55.57 .22	69.4 1.0
31.6	55.48 .43	65.6 2.8	6.01 .30	41.8 2.9	30.65 .19	67.4 1.3	55.78 .20	70.3 0.9
Apr. 10.6	55.83 .27	68.5 3.0	6.29 .24	44.7 2.9	30.82 .15	68.9 1.6	55.97 .17	71.1 0.7
20.5	56.02 +.10	71.5 3.1	6.50 .19	47.6 2.9	30.95 .11	70.6 1.8	56.12 .14	71.7 0.5
30.5	56.04 −.05	74.6 3.1	6.66 .12	50.4 2.8	31.05 .08	72.6 2.0	56.24 .11	72.1 0.4
May 10.5	55.91 .21	77.7 2.9	6.75 +.06	53.1 2.7	31.11 .04	74.6 2.0	56.33 .08	72.4 0.2
20.4	55.63 .35	80.5 2.7	6.78 .00	55.7 2.5	31.13 +.01	76.6 2.0	56.39 .05	72.6 +0.1
30.4	55.21 .48	83.1 2.4	6.75 −.06	58.1 2.3	31.13 −.02	78.6 1.9	56.43 +.02	72.7 0.0
June 9.4	54.68 .59	85.3 2.0	6.67 .11	60.2 2.0	31.10 .05	80.4 1.8	56.43 −.01	72.6 −0.1
19.4	54.04 .68	87.1 1.6	6.52 .17	62.0 1.6	31.03 .07	82.1 1.5	56.41 .03	72.5 0.1
29.3	53.32 .76	88.4 1.1	6.33 .22	63.5 1.3	30.95 .10	83.5 1.3	56.37 .06	72.4 0.2
July 9.3	52.53 .81	89.3 +0.6	6.09 .26	64.6 0.9	30.84 .12	84.7 1.0	56.29 .08	72.1 0.3
19.3	51.70 .85	89.6 0.0	5.81 .30	65.2 +0.5	30.71 .14	85.5 0.7	56.20 .10	71.8 0.3
29.3	50.84 .86	89.4 −0.5	5.50 .32	65.5 0.0	30.56 .15	86.1 +0.4	56.09 .12	71.5 0.4
Aug. 8.2	49.97 .86	88.6 1.0	5.17 .33	65.3 −0.4	30.40 .16	86.2 0.0	55.96 .13	71.0 0.4
18.2	49.12 .83	87.3 1.5	4.83 .33	64.6 0.9	30.24 .16	86.1 −0.3	55.83 .14	70.6 0.5
28.2	48.31 .79	85.5 2.0	4.50 .32	63.6 1.3	30.08 .16	85.6 0.7	55.69 .13	70.1 0.5
Sept. 7.1	47.56 .72	83.3 2.5	4.20 .29	62.1 1.6	29.92 .15	84.7 1.1	55.56 .12	69.7 0.4
17.1	46.87 .64	80.6 2.9	3.93 .24	60.4 1.9	29.79 .12	83.4 1.4	55.45 .10	69.3 0.4
27.1	46.29 .53	77.6 3.2	3.72 .18	58.3 2.2	29.68 .10	81.8 1.7	55.36 .07	68.9 0.3
Oct. 7.1	45.81 .41	74.2 3.5	3.58 .10	56.1 2.3	29.60 .06	80.0 2.1	55.31 −.04	68.6 −0.2
17.0	45.47 .27	70.5 3.7	3.52 −.02	53.7 2.3	29.56 −.02	77.7 2.4	55.29 +.01	68.5 0.0
27.0	45.27 −.12	66.7 3.9	3.55 +.07	51.4 2.3	29.56 +.03	75.2 2.5	55.32 .05	68.6 +0.2
Nov. 6.0	45.23 +.04	62.8 3.9	3.67 .17	49.2 2.1	29.62 .08	72.5 2.8	55.40 .11	68.9 0.4
16.0	45.35 .20	58.9 3.9	3.89 .26	47.2 1.9	29.73 .14	69.6 3.0	55.53 .16	69.4 0.6
25.9	45.63 .37	55.0 3.8	4.20 .35	45.5 1.5	29.89 .19	66.6 3.1	55.71 .21	70.2 0.9
Dec. 5.9	46.08 .53	51.4 3.5	4.58 .42	44.1 1.1	30.10 .24	63.5 3.1	55.94 .25	71.1 1.1
15.9	46.69 .67	48.0 3.2	5.04 .49	43.2 0.7	30.36 .28	60.5 3.0	56.21 .29	72.4 1.3
25.8	47.43 .80	45.0 2.7	5.56 .54	42.8 −0.2	30.66 .31	57.6 2.8	56.51 .32	73.8 1.5
35.8	48.28 +.89	42.6 −2.2	6.11 +.57	42.8 +0.3	30.98 +.35	54.9 −2.5	56.84 +.33	75.4 +1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Ursæ Minoris.		β Bootis.		3 Libræ.		μ^1 Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 14 51	° ′ 74 39	h m 14 57	° ′ 40 52	h m 15 10	° ′ 8 54	h m 15 19	° ′ 37 48
	s	″	s	″	s	″	s	″
Jan. 0.8	4.05 +.74	54.0 −2.7	10.76 +.34	65.4 −2.9	12.15 +.31	58.8 +1.7	42.52 +.31	60.2 −3.0
10.8	4.84 .82	51.5 2.1	11.11 .37	62.7 2.5	12.46 .32	60.6 1.7	42.85 .34	57.4 2.6
20.8	5.69 .88	49.7 1.5	11.49 .38	60.5 2.0	12.79 .33	62.3 1.7	43.20 .36	55.0 2.2
30.8	6.59 .91	48.5 0.9	11.87 .39	58.7 1.5	13.13 .33	64.0 1.6	43.57 .37	53.0 1.7
Feb. 9.7	7.49 .90	48.0 −0.3	12.26 .38	57.6 0.9	13.45 .32	65.5 1.5	43.93 .37	51.6 1.1
19.7	8.37 .86	48.2 +0.5	12.62 .36	57.0 −0.3	13.77 .31	66.9 1.3	44.29 .35	50.8 −0.5
Mar. 1.7	9.20 .79	49.1 1.1	12.97 .33	57.1 +0.3	14.07 .29	68.2 1.1	44.64 .33	50.6 +0.1
11.7	9.95 .70	50.5 1.7	13.28 .30	57.7 0.9	14.34 .26	69.2 0.9	44.96 .30	51.0 0.6
21.6	10.60 .59	52.5 2.2	13.56 .27	58.8 1.4	14.59 .24	69.9 0.7	45.24 .27	51.9 1.2
31.6	11.13 .46	54.9 2.6	13.81 .22	60.4 1.8	14.82 .21	70.5 0.4	45.50 .24	53.3 1.6
Apr. 10.6	11.52 .32	57.7 2.9	14.00 .18	62.4 2.1	15.02 .19	70.8 0.2	45.72 .20	55.1 2.0
20.5	11.77 .18	60.7 3.1	14.16 .13	64.7 2.4	15.19 .16	71.0 +0.1	45.89 .16	57.2 2.3
30.5	11.88 +.04	63.8 3.1	14.27 .09	67.2 2.5	15.33 .13	71.0 −0.1	46.03 .12	59.6 2.4
May 10.5	11.84 −.10	66.9 3.0	14.34 .05	69.7 2.6	15.45 .10	70.8 0.2	46.13 .08	62.1 2.5
20.5	11.67 .24	69.9 2.9	14.36 +.01	72.3 2.5	15.53 .07	70.5 0.3	46.18 +.04	64.6 2.5
30.4	11.37 .36	72.6 2.6	14.35 −.03	74.8 2.4	15.59 .04	70.2 0.4	46.20 .00	67.1 2.4
June 9.4	10.95 .47	75.1 2.3	14.30 .07	77.1 2.2	15.62 +.01	69.8 0.4	46.18 −.04	69.5 2.3
19.4	10.43 .57	77.2 1.9	14.21 .10	79.1 1.9	15.61 −.02	69.4 0.4	46.12 .08	71.7 2.0
29.4	9.83 .64	78.8 1.4	14.09 .14	80.9 1.6	15.58 .04	69.0 0.4	46.02 .11	73.6 1.8
July 9.3	9.15 .71	80.0 0.9	13.94 .16	82.3 1.2	15.53 .07	68.5 0.4	45.90 .14	75.2 1.4
19.3	8.42 .75	80.6 +0.4	13.77 .18	83.3 0.8	15.45 .09	68.1 0.4	45.75 .17	76.4 1.1
29.3	7.65 .78	80.8 −0.1	13.58 .20	83.9 +0.4	15.34 .11	67.7 0.4	45.57 .19	77.3 0.7
Aug. 8.2	6.87 .79	80.4 0.7	13.37 .21	84.1 0.0	15.22 .13	67.3 0.4	45.37 .20	77.7 +0.2
18.2	6.08 .78	79.5 1.2	13.15 .22	83.9 −0.5	15.08 .14	66.9 0.3	45.16 .21	77.8 −0.2
28.2	5.31 .75	78.0 1.7	12.93 .21	83.2 0.9	14.95 .14	66.6 0.3	44.95 .21	77.4 0.6
Sept. 7.2	4.58 .71	76.1 2.2	12.73 .20	82.1 1.3	14.81 .13	66.4 0.2	44.74 .20	76.6 1.0
17.1	3.90 .64	73.7 2.6	12.54 .18	80.5 1.8	14.68 .12	66.2 −0.1	44.55 .19	75.3 1.5
27.1	3.31 .55	70.9 3.0	12.37 .15	78.6 2.1	14.58 .09	66.2 0.0	44.37 .16	73.6 1.9
Oct. 7.1	2.80 .45	67.8 3.3	12.24 .11	76.2 2.5	14.50 .06	66.2 +0.2	44.22 .13	71.6 2.2
17.1	2.41 .33	64.3 3.6	12.15 .06	73.6 2.8	14.46 −.02	66.5 0.3	44.12 .08	69.2 2.6
27.0	2.15 .20	60.6 3.8	12.11 −.01	70.6 3.1	14.46 +.03	66.9 0.5	44.06 −.03	66.4 2.9
Nov. 6.0	2.02 −.05	56.7 3.9	12.13 +.05	67.4 3.3	14.51 .07	67.5 0.7	44.05 +.02	63.4 3.1
16.0	2.05 +.10	52.8 3.9	12.21 .11	64.0 3.5	14.61 .13	68.4 1.0	44.10 .08	60.2 3.3
25.9	2.22 .25	48.9 3.8	12.35 .17	60.5 3.5	14.76 .17	69.4 1.2	44.21 .14	56.8 3.4
Dec. 5.9	2.55 .40	45.2 3.7	12.54 .23	57.0 3.5	14.96 .22	70.7 1.4	44.38 .20	53.4 3.4
15.9	3.03 .54	41.6 3.4	12.80 .28	53.6 3.3	15.20 .26	72.2 1.5	44.60 .25	50.0 3.3
25.9	3.64 .68	38.4 3.0	13.10 .32	50.4 3.1	15.48 .29	73.8 1.6	44.87 .29	46.8 3.1
35.8	4.36 +.77	35.7 −2.5	13.43 +.36	47.5 −2.7	15.78 +.32	75.5 +1.7	45.18 +.33	43.8 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*γ² Ursæ Minoris. Right Ascension.	*γ² Ursæ Minoris. Declination North.	α Coronæ Borealis. Right Ascension.	α Coronæ Borealis. Declination North.	α Serpentis. Right Ascension.	α Serpentis. Declination North.	ε Serpentis. Right Ascension.	ε Serpentis. Declination North.
	$15^{h}\ 20^{m}$	$72^{\circ}\ 16'$	$15^{h}\ 29^{m}$	$27^{\circ}\ 7'$	$15^{h}\ 38^{m}$	$6^{\circ}\ 49'$	$15^{h}\ 44^{m}$	$4^{\circ}\ 51'$
	s	″	s	″	s	″	s	″
Jan. 0.9	54.64 +.58	39.4 −3.0	19.78 +.29	74.3 −2.8	2.18 +.28	19.8 −2.2	30.60 +.28	25.7 −2.1
10.8	55.27 .68	36.7 2.5	20.09 .32	71.6 2.5	2.48 .30	17.6 2.1	30.88 .30	23.6 2.1
20.8	55.98 .74	34.5 1.9	20.41 .33	69.3 2.2	2.78 .32	15.5 2.0	31.19 .31	21.6 1.9
30.8	56.74 .78	32.9 1.3	20.75 .34	67.3 1.8	3.10 .32	13.7 1.7	31.51 .32	19.8 1.7
Feb. 9.8	57.53 .79	32.0 −0.6	21.09 .34	65.7 1.3	3.43 .32	12.2 1.4	31.83 .32	18.3 1.4
19.7	58.31 .78	31.7 +0.1	21.42 .33	64.7 0.8	3.74 .31	10.9 1.1	32.14 .31	17.0 1.1
Mar. 1.7	59.07 .73	32.1 0.8	21.74 .31	64.2 −0.2	4.04 .29	10.0 0.7	32.44 .30	16.1 0.7
11.7	59.77 .67	33.2 1.4	22.04 .29	64.2 +0.3	4.32 .27	9.5 −0.3	32.73 .28	15.5 0.4
21.7	60.40 .58	34.8 1.9	22.31 .26	64.8 0.7	4.59 .25	9.3 0.0	33.00 .26	15.3 −0.1
31.6	60.93 .48	37.0 2.4	22.56 .23	65.7 1.2	4.83 .23	9.5 +0.3	33.24 .24	15.4 +0.2
Apr. 10.6	61.36 .37	39.6 2.7	22.77 .20	67.1 1.5	5.04 .20	10.0 0.6	33.46 .21	15.8 0.5
20.6	61.67 .25	42.5 3.0	22.95 .16	68.8 1.8	5.23 .17	10.7 0.9	33.65 .18	16.5 0.8
30.5	61.86 .13	45.5 3.1	23.10 .13	70.7 2.0	5.39 .15	11.7 1.1	33.82 .15	17.3 1.0
May 10.5	61.93 +.01	48.6 3.1	23.21 .09	72.8 2.2	5.52 .12	12.8 1.2	33.96 .12	18.4 1.1
20.5	61.88 −.11	51.7 3.0	23.29 .06	75.0 2.2	5.62 .09	14.0 1.2	34.07 .09	19.5 1.2
30.5	61.71 .22	54.7 2.9	23.33 +.03	77.2 2.1	5.69 .06	15.3 1.3	34.15 .06	20.7 1.2
June 9.4	61.43 .33	57.4 2.6	23.34 −.01	79.2 2.0	5.73 +.03	16.6 1.2	34.19 +.03	21.9 1.2
19.4	61.06 .42	59.9 2.2	23.32 .04	81.2 1.9	5.75 .00	17.8 1.2	34.21 .00	23.0 1.1
29.4	60.59 .50	61.9 1.8	23.26 .07	83.0 1.6	5.73 −.04	18.9 1.1	34.20 −.03	24.1 1.0
July 9.4	60.05 .57	63.5 1.4	23.17 .10	84.5 1.4	5.67 .07	19.9 0.9	34.15 .06	25.1 0.9
19.3	59.45 .63	64.6 0.9	23.06 .13	85.7 1.1	5.60 .09	20.8 0.8	34.08 .09	25.9 0.8
29.3	58.80 .67	65.2 +0.4	22.92 .15	86.6 0 7	5.49 .11	21.5 0.6	33.98 .11	26.6 0.6
Aug. 8.3	58 12 .69	65.3 −0.2	22.76 .17	87.1 +0.4	5.37 .13	22.1 0.5	33.86 .13	27.2 0.5
18.2	57.42 .70	64.9 0.7	22.59 .18	87.3 0.0	5.23 .15	22.4 0.3	33.73 .14	27.6 0.3
28.2	56.73 .69	63.9 1.2	22.41 .18	87.2 −0.3	5.08 .15	22.6 +0.1	33.58 .15	27.8 +0.1
Sept. 7.2	56.05 .66	62.4 1.7	22.23 .18	86.7 0.7	4.93 .15	22.5 −0.2	33.43 .15	27.8 −0.1
17.2	55.40 .62	60.5 2.2	22.06 .16	85.8 1.1	4.79 .14	22.3 0.4	33.28 .14	27.6 0.3
27.1	54.81 .55	58.1 2.6	21.91 .14	84.6 1.4	4.67 .12	21.8 0.6	33.15 .12	27.1 0.6
Oct. 7.1	54.30 .47	55.3 3.0	21.78 .11	82.9 1.8	4.56 .09	21.0 0.9	33.05 .09	26.5 0.8
17.1	53.88 .37	52.1 3.3	21.69 .07	81.0 2.1	4.49 .05	20.0 1.1	32.97 .06	25.6 1.0
27.1	53.56 .26	48.6 3.6	21.64 −.02	78.7 2.4	4.46 −.01	18.8 1.4	32.94 −.01	24.4 1.2
Nov. 6.0	53.36 −.14	44.9 3.8	21.65 +.03	76.2 2.7	4.47 +.04	17.3 1.6	32.95 +.04	23.1 1.5
16.0	53.29 .00	41.0 3.9	21.70 .08	73.4 2.9	4.53 .09	15.6 1.8	33.00 .08	21.5 1.7
26.0	53.35 +.13	37.1 3.9	21.80 .13	70.5 3.0	4.64 .14	13.6 2.0	33.11 .13	19.7 1.9
Dec. 5.9	53.55 .27	33.2 3.8	21.96 .18	67.4 3.1	4.81 .18	11.6 2.1	33.26 .18	17.8 2.0
15.9	53.89 .40	29.6 3.6	22.17 .23	64.3 3.0	5.01 .23	9.4 2.2	33.47 .22	15.7 2.1
25.9	54.35 .52	26.1 3.2	22.42 .27	61.4 2.9	5.26 .26	7.1 2.2	33.71 .26	13.6 2.1
35.9	54.92 +.62	23.1 −2.8	22.71 +.30	58.5 −2.7	5.53 +.29	4.9 −2.2	33.98 +.28	11.5 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β^1 Scorpii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$15^{h}\ 48^{m}$	78° 10′	$15^{h}\ 52^{m}$	27° 14′	$15^{h}\ 52^{m}$	22° 15′	$15^{h}\ 58^{m}$	19° 27′
	s	″	s	″	s	″	s	″
Jan. 0.9	32.93 +.70	34.8 −3.1	20.84 +.27	29.2 −2.9	51.20 +.30	37.6 +0.9	4.83 +.29	31.1 +1.0
10.9	33.71 .85	31.9 2.7	21.12 .30	26.4 2.6	51.51 .32	38.5 1.1	5.14 .32	32.2 1.1
20.8	34.63 .98	29.5 2.2	21.44 .32	24.0 2.3	51.85 .34	39.6 1.2	5.46 .33	33.3 1.2
30.8	35.66 1.06	27.6 1.5	21.76 .33	21.9 1.9	52.19 .35	40.8 1.2	5.80 .34	34.6 1.2
Feb. 9.8	36.75 1.11	26.4 0.9	22.10 .33	20.2 1.4	52.54 .35	42.1 1.2	6.14 .34	35.8 1.2
19.8	37.86 1.12	25.9 −0.2	22.43 .33	19.1 0.9	52.88 .34	43.3 1.2	6.48 .33	37.0 1.2
Mar. 1.7	38.97 1.08	26.0 +0.5	22.75 .32	18.4 −0.4	53.21 .32	44.4 1.1	6.81 .32	38.1 1.1
11.7	40.02 1.01	26.8 1.1	23.06 .30	18.3 +0.2	53.53 .31	45.6 1.1	7.12 .30	39.1 1.0
21.7	40.98 .91	28.2 1.7	23.35 .27	18.8 0.7	53.83 .29	46.6 1.0	7.41 .28	40.0 0.8
31.6	41.82 .77	30.2 2.2	23.61 .25	19.7 1.1	54.10 .26	47.5 0.8	7.69 .26	40.8 0.7
Apr. 10.6	42.52 .62	32.6 2.6	23.84 .22	21.0 1.5	54.35 .24	48.2 0.7	7.94 .24	41.5 0.6
20.6	43.05 .45	35.3 2.9	24.04 .19	22.6 1.8	54.58 .21	48.9 0.6	8.17 .21	42.0 0.5
30.6	43.41 .26	38.3 3.1	24.21 .15	24.6 2.1	54.78 .18	49.5 0.5	8.36 .18	42.4 0.4
May 10.5	43.58 +.08	41.4 3.1	24.35 .12	26.7 2.2	54.95 .15	50.0 0.5	8.53 .16	42.7 0.3
20.5	43.56 −.11	44.6 3.1	24.45 .08	28.9 2.3	55.08 .12	50.5 0.4	8.67 .13	42.9 0.2
30.5	43.37 .29	47.6 3.0	24.51 .05	31.2 2.2	55.19 .09	50.8 0.3	8.79 .09	43.1 0.1
June 9.5	43.00 .45	50.5 2.7	24.54 +.01	33.4 2.2	55.26 .06	51.1 0.3	8.86 .06	43.2 0.1
19.4	42.46 .61	53.1 2.4	24.54 −.02	35.5 2.0	55.30 +.02	51.3 0.2	8.90 +.02	43.3 +0.1
29.4	41.79 .74	55.3 2.1	24.50 .06	37.4 1.8	55.30 −.01	51.5 0.1	8.91 −.01	43.3 0.0
July 9.4	40.98 .86	57.2 1.6	24.42 .09	39.0 1.5	55.27 .05	51.6 +0.1	8.88 .04	43.3 0.0
19.3	40.07 .96	58.6 1.2	24.32 .12	40.4 1.2	55.21 .08	51.6 0.0	8.82 .07	43.3 −0.1
29.3	39.07 1.03	59.5 0.7	24.18 .15	41.5 0.9	55.11 .11	51.6 −0.1	8.73 .10	43.1 0.1
Aug. 8.3	38.01 1.09	60.0 +0.2	24.03 .17	42.3 0.6	54.99 .13	51.5 0.2	8.62 .13	43.0 0.2
18.3	36.91 1.11	59.9 −0.4	23.85 .18	42.7 +0.2	54.85 .15	51.2 0.2	8.48 .15	42.7 0.2
28.2	35.80 1.11	59.2 0.9	23.67 .19	42.7 −0.1	54.69 .16	51.0 0.3	8.32 .16	42.5 0.3
Sept. 7.2	34.70 1.09	58.1 1.4	23.48 .19	42.4 0.5	54.54 .16	50.6 0.4	8.17 .16	42.2 0.3
17.2	33.64 1.03	56.5 1.9	23.30 .18	41.6 0.9	54.38 .15	50.2 0.4	8.01 .15	41.9 0.3
27.2	32.65 .96	54.4 2.3	23.13 .16	40.6 1.3	54.24 .13	49.8 0.4	8.87 .13	41.5 0.3
Oct. 7.1	31.74 .85	51.8 2.7	22.99 .13	39.1 1.6	54.13 .10	49.3 0.4	7.76 .10	41.2 0.3
17.1	30.95 .72	48.9 3.1	22.87 .09	37.3 2.0	54.05 .06	48.9 0.4	7.68 .06	40.9 0.2
27.1	30.30 .57	45.7 3.4	22.80 −.05	35.2 2.3	54.01 −.01	48.6 0.3	7.64 −.02	40.8 −0.1
Nov. 6.0	29.82 .39	42.1 3.6	22.78 .00	32.7 2.6	54.02 +.04	48.4 −0.2	7.65 +.03	40.7 0.0
16.0	29.52 −.20	38.4 3.8	22.80 +.05	30.0 2.8	54.09 .09	48.3 0.0	7.70 .08	40.8 +0.2
26.0	29.41 .00	34.6 3.8	22.88 .11	27.1 3.0	54.21 .15	48.4 +0.2	7.82 .14	41.1 0.4
Dec. 6.0	29.51 +.20	30.8 3.8	23.01 .16	24.1 3.0	54.38 .20	48.7 0.4	7.98 .19	41.5 0.6
15.9	29.81 .40	27.1 3.6	23.20 .21	21.0 3.1	54.60 .24	49.3 0.6	8.19 .23	42.2 0.7
25.9	30.31 .59	23.6 3.3	23.43 .25	18.0 3.0	54.87 .28	50.0 0.8	8.45 .27	43.0 0.9
35.9	30.98 +.76	20.4 −3.0	23.69 +.28	15.1 −2.8	55.17 +.31	50.8 +1.0	8.74 +.30	44.0 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*Groombridge 2320.		δ Ophiuchi.		τ Herculis.		α Scorpii. (*Antares.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 16 5	° ′ 68 8	h m 16 7	° ′ 3 22	h m 16 15	° ′ 46 36	h m 16 21	° ′ 26 9
	s	″	s	″	s	″	s	″
Jan. 0.9	56.61 +.41	16.0 −3.4	42.87 +.27	8.4 +1.8	55.33 +.27	38.2 −3.3	38.98 +.29	0.4 +0.5
10.9	57.06 .49	12.8 3.0	43.15 .29	10.2 1.7	55.63 .32	35.1 3.0	39.28 .32	1.0 0.7
20.9	57.59 .56	10.1 2.5	43.44 .31	11.9 1.7	55.96 .35	32.2 2.6	39.61 .34	1.8 0.8
30.8	58.18 .61	7.9 1.9	43.76 .32	13.5 1.5	56.33 .38	29.9 2.1	39.95 .35	2.7 0.9
Feb. 9.8	58.81 .64	6.4 1.2	44.08 .32	14.9 1.3	56.72 .39	28.1 1.5	40.30 .35	3.6 1.0
19.8	59.46 .65	5.5 −0.6	44.39 .31	16.1 1.1	57.11 .39	26.9 0.9	40.65 .35	4.6 1.0
Mar. 1.7	60.10 .64	5.3 +0.1	44.70 .31	17.1 0.9	57.50 .40	26.3 −0.2	41.00 .34	5.5 0.9
11.7	61.72 .60	5.7 0.8	45.00 .29	17.8 0.6	57.88 .37	26.4 +0.4	41.34 .33	6.4 0.9
21.7	61.30 .55	6.8 1.4	45.28 .27	18.3 +0.3	58.23 .34	27.1 1.0	41.66 .31	7.3 0.9
31.7	61.83 .49	8.5 2.0	44.54 .25	18.4 0.0	58.56 .31	28.3 1.5	41.96 .29	8.2 0.8
Apr. 10.6	62.27 .41	10.7 2.4	45.78 .23	18.3 −0.2	58.85 .27	30.1 2.0	42.24 .27	8.9 0.7
20.6	62.64 .32	13.4 2.8	45.99 .20	18.0 0.4	59.11 .23	32.3 2.4	42.50 .25	9.6 0.7
30.6	62.92 .23	16.3 3.0	46.19 .18	17.6 0.6	59.32 .19	34.9 2.7	42.73 .22	10.3 0.6
May 10.6	63.10 .13	19.4 3.2	46.35 .15	16.9 0.7	59.48 .14	37.6 2.9	42.94 .19	10.9 0.6
20.5	63.18 +.03	22.6 3.2	46.49 .12	16.2 0.8	59.60 .09	40.5 2.9	42.11 .16	11.4 0.5
30.5	63.16 −.06	25.7 3.1	46.59 .09	15.4 0.8	59.66 +.04	43.5 2.9	42.25 .12	11.9 0.5
June 9.5	63.05 .16	28.8 2.9	46.67 .06	14.6 0.8	59.68 −.01	46.4 2.8	43.35 .09	12.4 0.4
19.4	62.85 .24	31.6 2.7	46.71 +.02	13.8 0.8	59.65 .06	49.1 2.6	43.42 .05	12.8 0.4
29.4	62.57 .33	34.1 2.4	46.72 −.01	13.0 0.7	59.57 .10	51.6 2.4	43.45 +.01	13.2 0.3
July 9.4	62.20 .40	36.3 2.0	46.69 .04	12.3 0.7	59.44 .17	53.8 2.0	43.44 −.03	13.5 0.3
19.4	61.77 .46	38.0 1.5	46.64 .07	11.7 0.6	59.28 .19	55.6 1.7	43.39 .07	13.7 0.2
29.3	61.28 .51	39.3 1.1	46.55 .10	11.1 0.5	59.07 .22	57.1 1.3	43.31 .10	13.9 +0.1
Aug. 8.3	60.75 .55	40.1 +0.6	46.44 .12	10.6 0.4	58.84 .25	58.2 0.8	43.19 .13	14.0 0.0
18.3	60.19 .57	40.4 0.0	46.31 .14	10.3 0.3	58.58 .27	58.7 +0.3	43.05 .15	13.9 −0.1
28.3	59.60 .59	40.2 −0.5	46.17 .15	10.0 0.2	58.31 .28	58.9 −0.1	42.89 .17	13.8 0.2
Sept. 7.2	59.02 .58	39.4 1.0	46.02 .15	9.9 −0.1	58.03 .28	58.5 0.6	42.72 .17	13.6 0.3
17.2	58.44 .56	38.2 1.5	45.87 .15	9.9 +0.1	57.74 .27	57.6 1.1	42.55 .16	13.2 0.4
27.2	57.90 .52	36.4 2.0	45.73 .13	10.0 0.2	57.48 .25	56.3 1.5	42.40 .15	12.8 0.5
Oct. 7.1	57.40 .47	34.2 2.5	45.61 .10	10.3 0.4	57.24 .22	54.6 2.0	42.26 .12	12.3 0.5
17.1	56.97 .40	31.5 2.9	45.52 .07	10.8 0.6	57.04 .18	52.3 2.4	42.16 .08	11.8 0.5
27.1	56.61 .31	28.5 3.2	45.47 −.03	11.4 0.8	56.88 .13	49.7 2.8	42.09 −.04	11.3 0.5
Nov. 6.1	56.35 .22	25.1 3.5	45.46 +.01	12.3 1.0	56.77 .08	46.8 3.1	42.08 +.01	10.9 0.4
16.0	56.18 −.11	21.5 3.7	45.50 .06	13.3 1.1	56.73 −.01	43.5 3.4	42.11 .06	10.6 0.3
26.0	56.13 +.01	17.7 3.8	45.59 .11	14.6 1.3	56.74 +.05	40.1 3.5	42.21 .12	10.4 −0.1
Dec. 6.0	56.19 .12	13.8 3.9	45.73 .16	16.0 1.5	56.83 .12	36.5 3.6	42.35 .17	10.3 +0.1
16.0	56.37 .23	10.0 3.8	45.92 .21	17.6 1.6	56.98 .18	32.9 3.6	42.55 .22	10.5 0.2
25.9	56.66 .34	6.3 3.5	46.14 .25	19.2 1.7	57.19 .24	29.3 3.5	42.80 .27	10.8 0.4
35.9	57.05 +.44	2.9 −3.2	46.41 +.28	21.0 +1.7	57.46 +.29	26.0 −3.2	43.09 +.30	11.3 +0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		*A Draconis.		ζ Ophiuchi.		*α Trianguli Australis	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$16^{h}\ 22^{m}$	$61^{\circ}\ 47'$	$16^{h}\ 28^{m}$	$69^{\circ}\ 1'$	$16^{h}\ 30^{m}$	$10^{\circ}\ 18'$	$16^{h}\ 35^{m}$	$68^{\circ}\ 47'$
	s	″	s	″	s	″	s	″
Jan. 0.9	15.17 +.32	44.4 −3.5	11.66 +.36	71.3 −3.5	11.43 +.26	38.1 +1.3	15.76 +.57	28.5 −1.7
10.9	15.52 .39	41.1 3.1	12.07 .46	68.0 3.1	11.70 .28	39.4 1.4	16.37 .65	26.9 1.3
20.8	15.94 .45	38.2 2.6	12.57 .54	65.1 2.7	11.99 .30	40.8 1.3	17.05 .71	25.8 0.9
30.8	16.41 .49	35.8 2.1	13 14 .60	62.7 2.1	12.30 .32	42.1 1.3	17.79 .76	25.1 0.5
Feb. 9.8	16.91 .52	34.0 1.5	13.77 .65	60.9 1.5	12.62 .32	43.3 1.2	18.56 .78	24.8 −0.1
19.8	17.44 .53	32.9 0.8	14.43 .67	59.7 0.8	12.94 .32	44.4 1.0	19.35 .79	25.0 +0.3
Mar. 1.7	17.97 .52	32.4 −0.1	15.09 .66	59.3 −0.1	13.26 .31	45.4 0.8	20.14 .78	25.5 0.7
11.7	18.48 .50	32.5 +0.5	15.75 .64	59.5 +0.5	13.57 .30	46.1 0.6	20.91 .76	26.4 1.1
21.7	18.96 .47	33.4 1.2	16.37 .60	60.3 1.2	13.86 .29	46.6 0.4	21.66 .73	27.7 1.5
31.7	19.40 .42	34.9 1.7	16.94 .54	61.8 1.8	14.14 .27	46.9 +0.2	22.37 .69	29.3 1.8
Apr. 10.6	19.80 .36	36.9 2.2	17.44 .46	63.8 2.3	14.40 .25	47.0 0.0	23.03 .63	31.2 2.0
20.6	20.13 .30	39.3 2.6	17.87 .38	66.2 2.7	14.64 .23	47.0 −0.1	23.63 .57	33.3 2.2
30.6	20.40 .23	42.1 2.9	18.20 .28	69.1 3.0	14.86 .20	46.8 0.3	24.16 .50	35.7 2.4
May 10.5	20.59 .16	45.1 3.1	18.43 .19	72.1 3.1	15.05 .18	46.4 0.4	24.62 .42	38.2 2.6
20.5	20.71 .08	48.3 3.2	18.57 +.09	75.3 3.2	15.22 .15	46.0 0.4	25.00 .33	40.8 2.6
30.5	20.76 +.01	51.4 3.2	18.60 −.02	78.5 3.2	15.35 .12	45.6 0.5	25.29 .24	43.4 2.7
June 9.5	20.73 −.07	54.6 3.0	18.53 .12	81.7 3.1	15.45 .08	45.1 0.5	25.48 .14	46.1 2.7
19.4	20.63 .14	57.5 2.8	18.37 .22	84.6 2.9	15.52 .05	44.6 0.5	25.57 +.04	48 7 2.6
29.4	20.45 .21	60.2 2.5	18.11 .30	87.4 2.6	15.55 +.01	44.1 0.5	25.56 −.06	51.2 2.4
July 9.4	20.21 .27	62.5 2.2	17.76 .39	89.8 2.2	15.54 −.02	43.6 0.4	25.46 .16	53.5 2.2
19.4	19.92 .32	64.5 1.8	17.34 .46	91.8 1.8	15.50 .06	43.2 0.4	25.25 .25	55.5 1.9
29.3	19.57 .37	66.1 1.3	16.84 .52	93.4 1.3	15.43 .09	42.9 0.4	24.97 .33	57.3 1.5
Aug. 8.3	19.18 .41	67.1 0.8	16.30 .57	94.5 0.9	15.33 .11	42.5 0.3	24.60 .40	58.6 1.1
18.3	18.76 .43	67.7 +0.3	15.71 .60	95.1 +0.4	15.20 .14	42.2 0.3	24.18 .45	59.5 0.7
28.2	18.32 .45	67.8 −0.2	15.10 .62	95.2 −0.2	15.06 .15	42.0 0.2	23.71 .49	60.0 +0.2
Sept. 7.2	17.86 .45	67.4 0.7	14.47 .63	94.8 0.7	14.91 .16	41.8 0.1	23.22 .50	60.0 −0.3
17.2	17.42 .44	66.4 1.2	13.85 .61	93.8 1.2	14.75 .15	41.7 −0.1	22.73 .48	59.5 0.7
27.2	16.99 .41	64.9 1.7	13.25 .58	92.4 1.7	14.60 .14	41.7 0.0	22.26 .45	58.5 1.2
Oct. 7.1	16.50 .37	63.0 2.2	12.69 .53	90.4 2.2	14.47 .12	41 7 +0.1	21.84 .39	57.1 1.6
17.1	16.24 .32	60.6 2.6	12.19 .47	88.0 2.6	14.37 .09	41.9 0.2	21.49 .31	55.3 2.0
27.1	15.96 .26	57.8 3.0	11.76 .39	85.2 3.0	14.30 −.05	42.2 0.4	21.24 .21	53.2 2.3
Nov. 6.1	15.73 .18	54.6 3.3	11.42 .29	82.0 3.3	14.28 .00	42.6 0.5	21.09 −.09	50.9 2.4
16.0	15.60 −.09	51.1 3.6	11.19 .18	78.6 3.6	14.30 +.05	43.2 0.7	21.06 +.04	48.4 2.5
26.0	15.55 .00	47.4 3.8	11.07 −.07	74.9 3.8	14.37 .10	43.9 0.8	21.16 .16	45.9 2.5
Dec. 6.0	15.59 +.09	43.6 3.8	11.06 +.06	71.1 3.8	14.50 .15	44.9 1.0	21.39 .29	43.5 2.4
15.9	15.73 .18	39.8 3.8	11.18 .18	67.2 3.8	14.67 .20	45.9 1.1	21.74 .41	41.2 2.2
25.9	15.95 .27	36.1 3.6	11.41 .29	63.5 3.6	14.88 .24	47.1 1.2	22.21 .52	39.1 1.9
35.9	16.26 +.35	32.6 −3.3	11.76 +.40	60.0 −3.4	15.14 +.26	48.4 +1.4	22.77 +.61	37.4 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Herculis.		κ Ophiuchi.		d Herculis.		*ε Ursæ Minoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 16 38	° ′ 39 9	h m 16 51	° ′ 9 34	h m 16 56	° ′ 33 44	h m 16 58	° ′ 82 14
	s	″	s	″	s	″	s	″
Jan. 0.9	32.78 +.24	36.2 −3.3	40.43 +.22	14.8 −2.2	55.25 +.21	57.4 −3.1	50.35 +.53	14.1 −3.4
10.9	33.04 .28	33.0 3.0	40.67 .25	12.6 2.2	55.49 .25	54.4 3.0	51.03 .82	10.8 3.2
20.9	33.33 .31	30.2 2.7	40.93 .28	10.6 2.0	55.76 .29	51.6 2.7	51.98 1.08	7.8 2.8
30.8	33.66 .34	27.7 2.2	41.22 .29	8.7 1.8	56.06 .31	49.1 2.3	53.17 1.30	5.3 2.3
Feb. 9.8	34.00 .35	25.7 1.8	41.51 .30	7.1 1.5	56.38 .33	47.1 1.8	54.56 1.46	3.3 1.7
19.8	34.36 .36	24.3 1.1	41.82 .31	5.8 1.1	56.71 .34	45.5 1.3	56.08 1.57	1.9 1.1
Mar. 1.8	34.71 .35	23.5 −0.5	42.13 .31	4.9 0.7	57.04 .34	44.6 0.7	57.68 1.62	1.1 −0.4
11.7	35.06 .34	23.2 +0.1	42.43 .30	4.3 −0.3	57.38 .33	44.2 −0.1	59.31 1.61	1.0 +0.2
21.7	35.40 .33	23.6 0.7	42.72 .29	4.2 +0.1	57.70 .32	44.4 +0.5	60.89 1.54	1.6 0.9
31.7	35.71 .30	24.6 1.2	43.00 .27	4.5 0.4	58.01 .30	45.1 1.0	62.36 1.41	2.7 1.5
Apr. 10.7	36.00 .27	26.1 1.7	43.26 .25	5.1 0.8	58.30 .28	46.3 1.5	63.69 1.24	4.4 2.0
20.6	36.26 .24	28.0 2.1	43.51 .23	6.0 1.1	58.56 .25	48.0 1.9	64.83 1.02	6.6 2.4
30.6	36.48 .21	30.2 2.4	43.73 .21	7.2 1.3	58.79 .22	50.1 2.2	65.73 .78	9.2 2.8
May 10.6	36.67 .17	32.8 2.6	43.92 .18	8.6 1.5	59.00 .18	52.4 2.5	66.38 .51	12.1 3.0
20.5	36.81 .12	35.5 2.8	44.09 .15	10.1 1.6	59.16 .15	55.0 2.6	66.75 +.23	15.2 3.1
30.5	36.91 .08	38.3 2.8	44.22 .12	11.7 1.6	59.29 .11	57.6 2.7	66.84 −.05	18.3 3.2
June 9.5	36.97 +.04	41.1 2.7	44.33 .09	13.4 1.6	59.37 .06	60.3 2.7	66.65 .33	21.5 3.1
19.5	36.99 −.01	43.7 2.6	44.39 .05	15.0 1.6	59.42 +.02	62.9 2.6	66.18 .60	24.5 2.9
29.4	36.96 .05	46.3 2.4	44.43 +.02	16.5 1.5	59.42 −.02	65.4 2.4	65.45 .86	27.4 2.7
July 9.4	36.88 .09	48.5 2.1	44.43 −.02	17.9 1.3	59.37 .06	67.7 2.2	64.47 1.09	29.9 2.4
19.4	36.77 .13	50.5 1.8	44.39 .06	19.2 1.2	59.29 .10	69.7 1.9	63.28 1.30	32.2 2.0
29.4	36.62 .17	52.1 1.5	44.31 .09	20.2 1.0	59.17 .14	71.4 1.5	61.89 1.47	34.0 1.6
Aug. 8.3	36.43 .20	53.4 1.1	44.21 .12	21.1 0.8	59.02 .17	72.8 1.2	60.35 1.61	35.4 1.2
18.3	36.22 .22	54.2 0.6	44.08 .14	21.8 0.5	58.83 .20	73.8 0.8	58.68 1.72	36.4 0.7
28.3	35.99 .24	54.6 +0.2	43.92 .16	22.2 0.3	58.63 .21	74.4 +0.4	56.92 1.79	36.8 +0.2
Sept. 7.2	35.75 .25	54.6 −0.3	43.76 .17	22.4 +0.1	58.41 .23	74.6 0.0	55.10 1.82	36.8 −0.3
17.2	35.50 .24	54.1 0.7	43.59 .17	22.3 −0.2	58.18 .23	74.4 −0.5	53.28 1.81	36.2 0.8
27.2	35.27 .23	53.2 1.2	43.43 .16	22.0 0.4	57.96 .22	73.7 0.9	51.49 1.76	35.2 1.3
Oct. 7.2	35.05 .21	51.8 1.6	43.28 .14	21.4 0.7	57.75 .19	72.6 1.3	49.77 1.67	33.7 1.8
17.1	34.86 .17	50.0 2.0	43.15 .11	20.5 1.0	57.57 .17	71.1 1.7	48.17 1.53	31.7 2.2
27.1	34.71 .13	47.8 2.4	43.05 .08	19.4 1.2	57.43 .13	69.2 2.1	46.72 1.35	29.2 2.6
Nov. 6.1	34.60 .08	45.2 2.7	43.00 −.03	18.1 1.5	57.32 .08	66.9 2.4	45.47 1.13	26.4 3.0
16.1	34.55 −.02	42.3 3.0	42.99 +.01	16.5 1.7	57.26 −.03	64.3 2.7	44.46 .88	23.2 3.3
26.0	34.56 +.03	39.2 3.3	43.02 .06	14.6 1.9	57.25 +.02	61.5 3.0	43.72 .60	19.8 3.5
Dec. 6.0	34.62 .09	35.8 3.4	43.10 .10	12.6 2.1	57.31 .08	58.4 3.2	43.27 −.30	16.3 3.6
16.0	34.75 .15	32.4 3.4	43.24 .16	10.5 2.2	57.41 .13	55.2 3.2	43.13 +.09	12.6 3.7
25.9	34.93 .21	29.0 3.3	43.41 .20	8.3 2.2	57.57 .18	51.9 3.2	43.30 .33	9.0 3.6
35.9	35.15 +.25	25.8 −3.1	43.63 +.23	6.1 −2.2	57.78 +.23	48.8 −3.0	43.78 +.62	5.5 −3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α^1 Herculis.		44 Ophiuchi.		β Draconis.		α Ophiuchi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 17 8	° ′ 14 31	h m 17 18	° ′ 24 3	h m 17 27	° ′ 52 23	h m 17 29	° ′ 12 38
	s	″	s	″	s	″	s	″
Jan. 0.9	52.30 +.20	60.4 −2.4	38.37 +.23	27.1 +0.3	32.80 +.18	31.4 −3.6	3.23 +.19	64.8 −2.3
10.9	52.52 .24	58.1 2.3	38.62 .27	27.5 0.4	33.01 .24	27.9 3.4	3.44 .22	62.5 2.2
20.9	52.77 .26	55.8 2.2	38.91 .30	27.9 0.5	33.28 .30	24.7 3.1	3.67 .25	60.4 2.1
30.8	53.05 .28	53.8 1.9	39.21 .32	28.4 0.5	33.60 .34	21.8 2.7	3.93 .27	58.4 1.9
Feb. 9.8	53.34 .30	52.1 1.6	39.54 .33	28.9 0.5	33.96 .38	19.4 2.2	4.21 .29	56.7 1.6
19.8	53.64 .31	50.7 1.2	39.88 .34	29.5 0.5	34.36 .40	17.5 1 6	4.51 .30	55.3 1.2
Mar. 1.8	53.95 .31	49.7 0.8	40.22 .34	30.0 0.5	34.76 .41	16.3 0.9	4.81 .30	54.3 0.8
11.7	54.25 .30	49.2 −0.3	40.55 .33	30.5 0.4	35.18 .42	15.7 −0.3	5.11 .30	53.8 −0.4
21.7	54.55 .29	49.1 +0.1	40.88 .33	30.9 0.4	35.60 .41	15.8 +0.4	5.41 .30	53.6 +0.1
31.7	54.83 .28	49.4 0.5	41.21 .32	31.2 0.3	36.00 .39	16.5 1.0	5.70 .29	53.9 0.5
Apr. 10.7	55.11 .26	50.1 0.9	41.52 .31	31.5 0.3	36.38 .36	17.8 1.6	5.98 .27	54.5 0.8
20.6	55.36 .24	51.2 1.3	41.81 .29	31.7 0.2	36.72 .33	19.6 2.1	6.25 .26	55.6 1.2
30.6	55.60 .22	52.6 1.5	42.09 .27	31.9 0.2	37.03 .29	21.9 2.5	6.50 .24	56.9 1.5
May 10.6	55.80 .20	54.3 1.7	42.35 .24	32.1 0.2	37.30 .24	24.6 2.8	6.72 .21	58.4 1.7
20.5	55.98 .16	56.1 1.9	42.57 .21	32.2 0.2	37.51 .19	27.6 3.1	6.92 .18	60.2 1.8
30.5	56.13 .13	58.0 1.9	42.77 .18	32.4 0.2	37.67 .13	30.7 3.2	7.09 .15	62.0 1.9
June 9.5	56.25 .10	59.9 1.9	42.93 .14	32.5 0.2	37.77 .07	33.9 3.2	7.23 .12	63.9 1.9
19.5	56.33 .06	61.8 1.9	43.05 .10	32.7 0.2	37.81 +.01	37.1 3.1	7.33 .08	65.8 1.9
29.4	56.37 +.02	63.7 1.8	43.13 .06	32.9 0.2	37.79 −.05	40.1 3.0	7.39 +.04	67.6 1.8
July 9.4	56.38 −.01	65.3 1.6	43.17 +.02	33.2 0.2	37.72 .11	43.0 2.7	7.41 .00	69.3 1.6
19.4	56.34 .05	66.9 1.4	43.17 −.02	33.4 0.2	37.58 .16	45.6 2.4	7.40 −.03	70.8 1.4
29.4	56.27 .09	68.2 1.2	43.13 .06	33.6 0.2	37.39 .21	47.9 2.1	7.35 .07	72.2 1.2
Aug. 8.3	56.17 .11	69.3 1.0	43.05 .10	33.7 0.2	37.16 .26	49.8 1.7	7.26 .10	73.3 1.0
18.3	56.04 .14	70.1 0.7	42.93 .13	33.9 +0.1	36.88 .30	51.3 1.3	7.14 .13	74.2 0.8
28.3	55.89 .16	70.6 0.4	42.79 .15	34.0 0.0	36.57 .32	52.3 0.8	6.99 .16	74.8 0.5
Sept. 7.2	55.71 .17	70.9 +0.1	42.63 .17	34.0 0.0	36.24 .34	52.8 +0.3	6.83 .17	75.2 +0.2
17.2	55.54 .18	70.9 −0.2	42.45 .17	33.9 −0.1	35.89 .35	52.8 −0.2	6.65 .18	75.3 −0.1
27.2	55.36 .17	70.6 0.5	42.28 .17	33.8 0.2	35.54 .34	52.4 0.7	6.48 .17	75.1 0.3
Oct. 7.2	55.20 .16	70.0 0.7	42.12 .15	33.6 0.2	35.21 .33	51.4 1.2	6.31 .16	74.6 0.6
17.1	55.05 .13	69.0 1.1	41.98 .13	33.3 0.2	34.90 .30	49.9 1.7	6.16 .14	73.8 0.9
27.1	54.94 .10	67.8 1.4	41.87 .09	33.1 0.3	34.62 .26	48.0 2.2	6.03 .11	72.8 1.2
Nov. 6.1	54.87 .06	66.3 1.6	41.81 −.04	32.8 0.2	34.39 .20	45.5 2.6	5.95 .07	71.4 1.5
16.1	54.83 −.01	64.6 1.9	41.79 +.01	32.6 0.2	34.22 .14	42.7 3.0	5.90 −.03	69.8 1.7
26.0	54.85 +.04	62.5 2.1	41.82 .06	32.4 −0.1	34.11 −.07	39.6 3.3	5.90 +.02	68.0 1.9
Dec. 6.0	54.91 .09	60.3 2.3	41.91 .11	32.4 0.0	34.07 .00	36.2 3.5	5.94 .07	66.0 2.1
16.0	55.02 .14	58.0 2.4	41.05 .16	32.4 +0.1	34.10 +.07	32.6 3.6	6.04 .12	63.8 2.2
25.9	55.18 .18	55.6 2.4	42.24 .21	32.6 0.2	34.20 .14	29.0 3.6	6.18 .16	61.5 2.3
35.9	55.38 +.22	53.2 −2.4	42.47 +.25	32.8 +0.3	34.37 +.20	25.4 −3.5	6.36 +.20	59.2 −2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ω Draconis.		μ Herculis.		*ψ^1 Draconis (*pr.*)		γ Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$17^h\ 37^m$	$68^\circ\ 48'$	$17^h\ 41^m$	$27^\circ\ 47'$	$17^h\ 44^m$	$72^\circ\ 12'$	$17^h\ 53^m$	$51^\circ\ 29'$
	s	″	s	″	s	″	s	″
Jan. 1.0	38.04 +.18	44.0 −3.7	29.69 +.16	36.2 −2.9	6.97 +.16	25.2 −3.7	38.56 +.14	65.6 −3.6
10.9	38.27 .29	40.4 3.5	29.88 .21	33.3 2.8	7.20 .30	21.6 3.5	38.73 .20	62.0 3.4
20.9	38.61 .39	37.0 3.2	30.10 .24	30.6 2.6	7.56 .42	18.2 3.2	38.96 .26	58.7 3.2
30.9	39.04 .48	34.0 2.8	30.36 .27	28.1 2.3	8.04 .53	15.2 2.8	39.24 .31	55.7 2.8
Feb. 9.8	39.56 .55	31.5 2.2	30.64 .29	25.9 1.9	8.61 .62	12.6 2.3	39.57 .35	53.1 2.4
19.8	40.14 .60	29.6 1.7	30.94 .31	24.2 1.5	9.27 .69	10.5 1.7	39.94 .38	51.0 1.8
Mar. 1.8	40.76 .64	28.2 1.0	31.25 .32	23.0 1.0	9.98 .73	9.1 1.1	40.32 .40	49.5 1.2
11.8	41.40 .65	27.6 −0.3	31.57 .32	22.3 −0.4	10.72 .75	8.4 −0.4	40.73 .41	48.7 −0.5
21.7	42.04 .64	27.6 +0.4	31.88 .31	22.1 +0.1	11.47 .74	8.3 +0.3	41.14 .41	48.5 +0.1
31.7	42.67 .61	28.2 1.0	32.19 .31	22.5 0.6	12.20 .71	8.9 0.9	41.54 .40	48.9 0.8
Apr. 10.7	43.26 .57	29.5 1.6	32.49 .29	23.4 1.1	12.89 .66	10.1 1.5	41.93 .38	50.0 1.4
20.7	43.80 .51	31.4 2.1	32.77 .27	24.7 1.6	13.52 .59	11.9 2.0	42.29 .35	51.6 1.9
30.6	44.27 .43	33.8 2.6	33.03 .25	26.5 1.9	14.07 .51	14.2 2.5	42.62 .31	53.7 2.4
May 10.6	44.66 .34	36.5 2.9	33.27 .22	28.6 2.2	14.53 .40	16.8 2.9	42.91 .27	56.3 2.7
20.6	44.96 .25	39.5 3.2	33.48 .19	30.9 2.4	14.88 .29	19.8 3.1	43.16 .22	59.1 3.0
30.5	45.16 .15	42.8 3.3	33.65 .15	33.4 2.5	15.11 .17	23.0 3.3	43.35 .17	62.2 3.2
June 9.5	45.26 +.05	46.1 3.3	33.79 .12	35.9 2.6	15.23 +.07	26.3 3.3	43.49 .11	65.4 3.2
19.5	45.26 −.05	49.4 3.3	33.88 .08	38.5 2.5	15.22 −.07	29.6 3.3	43.58 +.05	68.7 3.2
29.5	45.15 .16	52.7 3.1	33.94 +.03	41.0 2.4	15.09 .19	32.9 3.1	43.60 −.01	71.9 3.1
July 9.4	44.95 .25	55.7 2.9	33.95 −.01	43.3 2.2	14.84 .31	35.9 2.9	43.56 .07	74.9 2.9
19.4	44.65 .34	58.4 2.6	33.92 .05	45.4 2.0	14.48 .41	38.7 2.7	43.46 .13	77.7 2.7
29.4	44.26 .43	60.9 2.3	33.85 .09	47.3 1.8	14.01 .51	41.2 2.3	43.31 .18	80.2 2.4
Aug. 8.4	43.80 .50	63.0 1.9	33.74 .13	48.9 1.4	13.46 .60	43.3 1.9	43.10 .23	82.4 2.0
18.3	43.27 .56	64.6 1.4	33.59 .16	50.2 1.1	12.82 .67	45.0 1.5	42.85 .27	84.1 1.6
28.3	42.69 .60	65.8 0.9	33.42 .19	51.2 0.8	12.12 .73	46.2 1.0	42.56 .30	85.5 1.1
Sept. 7.3	42.07 .63	66.4 +0.4	33.22 .20	51.7 +0.4	11.38 .76	47.0 +0.5	42.25 .33	86.4 0.6
17.2	41.42 .65	66.6 −0.1	33.01 .21	51.9 0.0	10.60 .78	47.2 0.0	41.91 .34	86.8 +0.1
27.2	40.78 .64	66.2 0.6	32.80 .21	51.7 −0.4	9.82 .78	46.9 −0.6	41.57 .34	86.7 −0.4
Oct. 7.2	40.14 .62	65.3 1.2	32.60 .20	51.1 0.8	9.05 .75	46.1 1.1	41.23 .33	86.0 0.9
17.2	39.54 .58	63.9 1.7	32.41 .18	50.1 1.2	8.32 .71	44.8 1.6	40.91 .31	84 9 1.4
27.1	38.99 .52	62.0 2.1	32.25 .15	48.7 1.6	7.64 .64	42.9 2.1	40.62 .27	83.3 1.9
Nov. 6.1	38.51 .44	59.6 2.6	32.12 .11	46.9 2.0	7.04 .56	40.6 2.5	40.37 .23	81.2 2.3
16.1	38.11 .35	56.8 3.0	32.03 .06	44.8 2.3	6.53 .45	37.9 2.9	40.17 .17	78.7 2.7
26.1	37.81 .25	53.6 3.3	31.99 −.01	42.4 2.5	6.14 .33	34.8 3.3	40.03 .11	75.8 3.1
Dec. 6.0	37.62 .14	50.2 3.6	32.00 +.04	39.7 2.8	5.87 .20	31.4 3.5	39.96 −.04	72.5 3.3
16.0	37.55 −.02	46.5 3.7	32.07 .09	36.9 2.9	5.73 −.07	27.8 3.7	39.95 +.02	69.1 3.5
26.0	37.59 +.10	42.8 3.7	32.18 .14	34.0 2.9	5.74 +.07	24.1 3.7	40.01 .10	65.6 3.6
35.9	37.75 +.22	39.2 −3.6	32.34 +.18	31.0 −2.9	5.88 +.21	20.4 −3.6	40.14 +.16	62.0 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Sagittarii.		μ^1 Sagittarii.		*σ Octantis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 17 57	° ′ 30 25	h m 18 6	° ′ 21 5	h 18	° ′ 89 16
	s	″	s	″	m s	″
Jan. 1.0	40.50 +.21	29.0 −0.3	11.49 +.18	28.3 +0.2	11 26.90 + 7.10	43.6 −3.2
10.9	40.73 .25	28.8 0.2	11.69 .22	28.6 0.3	11 35.57 10.20	40.4 3.0
20.9	40.99 .28	28.6 0.1	11.93 .25	28.9 0.3	11 47.19 12.98	37.6 2.7
30.9	41.28 .31	28.5 −0.1	12.19 .28	29.2 0.3	12 1.41 15.39	35.0 2.4
Feb. 9.9	41.60 .33	28.5 0.0	12.48 .30	29.5 0.3	12 17.83 17.39	32.8 2.0
19.8	41.94 .34	28.5 0.0	12.79 .31	29.8 0.2	12 36.04 18.95	31.0 1.6
Mar. 1.8	42.29 .35	28.5 +0.1	13.10 .32	30.0 0.2	12 55.57 20.03	29.7 1.1
11.8	42.64 .35	28.6 0.1	13.43 .32	30.1 +0.1	13 15.95 20.66	28.8 0.6
21.7	42.99 .36	28.7 0.1	13.75 .33	30.2 0.0	13 36.74 20.83	28.5 −0.1
31.7	43.35 .36	28.8 0.1	14.08 .33	30.1 −0.1	13 57.50 20.61	28.6 +0.4
Apr. 10.7	43.69 .34	28.9 0.1	14.40 .32	30.0 0.2	14 17.82 19.96	29.3 0.9
20.7	44.02 .33	29.0 0.1	14.72 .31	29.8 0.2	14 37.29 18.91	30.4 1.3
30.6	44.34 .31	29.1 0.2	15.02 .29	29.5 0.3	14 55.52 17.48	31.9 1.7
May 10.6	44.64 .29	29.3 0.2	15.30 .27	29.3 0.3	15 12.14 15.70	33.8 2.1
20.6	44.91 .26	29.6 0.3	15.56 .25	29.0 0.3	15 26.82 13.60	36.1 2.4
30.6	45.16 .23	29.9 0.3	15.79 .22	28.7 0.2	15 39.25 11.20	38.7 2.7
June 9.5	45.37 .19	30.2 0.4	16.00 .19	28.5 0.2	15 49.15 8.55	41.5 2.9
19.5	45.54 .15	30.7 0.5	16.17 .15	28.4 0.1	15 56.29 5.69	44.5 3.1
29.5	45.67 .10	31.2 0.5	16.29 .10	28.3 −0.1	16 0.49 + 2.69	47.6 3.1
July 9.4	45.75 .06	31.7 0.5	16.37 .06	28.2 0.0	16 1.66 − 0.35	50.8 3.1
19.4	45.78 +.01	32.2 0.6	16.41 +.02	28.3 +0.1	15 59.79 3.38	53.8 3.0
29.4	45.77 −.04	32.8 0.5	16.41 −.03	28.4 0.1	15 54.93 6.31	56.7 2.8
Aug. 8.4	45.71 .08	33.3 0.5	16.37 .07	28.5 0.1	15 47.22 9.05	59.3 2.5
18.3	45.61 .12	33.8 0.4	16.28 .10	28.6 0.1	15 36.93 11.46	61.6 2.1
28.3	45.48 .15	34.2 0.3	16.16 .13	28.7 0.1	15 24.43 13.47	63.5 1.6
Sept. 7.3	45.31 .17	34.5 0.2	16.01 .16	28.9 0.1	15 10.15 14.99	64.8 1.1
17.3	45.13 .18	34.6 +0.1	15.85 .17	29.0 0.1	14 54.63 15.94	65.7 +0.5
27.2	44.95 .19	34.7 0.0	15.68 .17	29.0 0.0	14 38.47 16.26	65.9 −0.1
Oct. 7.2	44.77 .18	34.6 −0.2	15.51 .16	29.0 0.0	14 22.32 15.93	65.6 0.7
17.2	44.60 .15	34.4 0.3	15.35 .15	29.0 0.0	14 6.84 14.93	64.6 1.2
27.1	44.46 .12	34.0 0.4	15.22 .12	29.0 0.0	13 52.68 13.29	63.1 1.8
Nov. 6.1	44.36 .08	33.6 0.5	15.12 .08	29.0 0.0	13 40.45 11.06	61.0 2.3
16.1	44.31 −.03	33.1 0.5	15.07 −.04	28.9 0.0	13 30.69 8.37	58.5 2.7
26.1	44.30 +.02	32.6 0.5	15.06 +.01	28.9 0.0	13 23.84 5.29	55.7 3.0
Dec. 6.0	44.35 .08	32.1 0.5	15.09 .06	28.9 0.1	13 20.21 − 1.95	52.6 3.2
16.0	44.45 .13	31.6 0.4	15.18 .11	29.0 0.1	13 19.98 + 1.49	49.3 3.3
26.0	44.60 .18	31.2 0.4	15.31 .16	29.2 0.2	13 23.19 4.90	46.0 3.3
36.0	44.81 +.22	30.9 −0.3	15.49 +.20	29.4 +0.3	13 29.74 + 8.20	42.7 −3.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Serpentis.		1 Aquilæ.		α Lyræ. (*Vega.*)		β Lyræ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$18^{h}\ 14^{m}$	$2^{\circ}\ 55'$	$18^{h}\ 28^{m}$	$8^{\circ}\ 19'$	$18^{h}\ 32^{m}$	$38^{\circ}\ 39'$	$18^{h}\ 45^{m}$	$33^{\circ}\ 12'$
	s	″	s	″	s	″	s	″
Jan. 1.0	45.33 +.16	53.2 +1.4	18.90 +.14	55.7 +0.9	38.12 +.10	54.9 −3.2	23.52 +.09	55.7 −3.0
10.9	45.50 .19	54.6 1.3	19.07 .18	56.6 1.0	38.25 .15	51.7 3.2	23.63 .13	52.7 3.0
20.9	45.70 .22	55.9 1.3	19.27 .21	57.6 0.9	38.42 .19	48.6 3.0	23.79 .18	49.8 2.8
30.9	45.94 .25	57.1 1.2	19.50 .24	58.5 0.8	38.63 .23	45.8 2.7	23.98 .22	47.0 2.6
Feb. 9.9	46.19 .27	58.2 1.0	19.75 .26	59.3 0.7	38.88 .27	43.2 2.4	24.22 .25	44.6 2.3
19.8	46.47 .28	59.1 0.8	20.02 .28	59.9 0.5	39.17 .30	41.1 1.9	24.48 .28	42.5 1.8
Mar. 1.8	46.75 .29	59.8 0.5	20.31 .29	60.3 0.3	39.48 .32	39.5 1.4	24.77 .30	40.9 1.4
11.8	47.05 .30	60.2 +0.3	20.61 .30	60.6 +0.1	39.80 .33	38.4 0.8	25.07 .31	39.8 0.8
21.8	47.35 .30	60.3 0.0	20.91 .31	60.6 −0.1	40.14 .34	37.9 −0.2	25.39 .32	39.3 −0.3
31.7	47.65 .30	60.2 −0.3	21.22 .31	60.4 0.3	40.48 .34	38.0 +0.4	25.72 .33	39.3 +0.3
Apr. 10.7	47.95 .29	59.7 0.5	21.52 .30	60.0 0.5	40.82 .34	38.7 1.0	26.05 .32	39.9 0.9
20.7	48.24 .28	59.1 0.8	21.82 .30	59.4 0.7	41.15 .32	39.9 1.5	26.37 .32	41.0 1.4
30.6	48.52 .27	58.2 1.0	22.11 .28	58.6 0.8	41.47 .30	41.7 2.0	26.67 .30	42.6 1.8
May 10.6	48.78 .25	57.2 1.1	22.39 .27	57.7 0.9	41.76 .28	43.8 2.4	26.96 .28	44.7 2.2
20.6	49.02 .23	56.0 1.2	22.65 .25	56.7 1.0	42.02 .25	46.4 2.7	27.23 .25	47.0 2.5
30.6	49.24 .20	54.8 1.2	22.88 .22	55.7 1.0	42.25 .21	49.1 2.9	27.47 .22	49.6 2.7
June 9.5	49.42 .17	53.6 1.2	23.09 .19	54.7 1.0	42.44 .17	52.1 3.0	27.67 .18	52.4 2.9
19.5	49.58 .14	52.4 1.2	23.26 .15	53.8 0.9	42.59 .12	55.1 3.1	27.83 .14	55.3 2.9
29.5	49.69 .10	51.2 1.1	23.39 .12	52.9 0.9	42.68 .07	58.2 3.0	27.94 .09	58.2 2.9
July 9.5	49.77 .06	50.2 1.0	23.49 .08	52.0 0.8	42.73 +.02	61.1 2.9	28.01 +.04	61.0 2.8
19.4	49.81 +.02	49.2 0.9	23.54 +.03	51.3 0.7	42.72 −.03	64.0 2.7	28.03 .00	63.7 2.6
29.4	49.80 −.02	48.4 0.8	23.55 −.01	50.7 0.5	42.67 .08	66.5 2.5	28.00 −.05	66.2 2.4
Aug. 8.4	49.76 .06	47.7 0.6	23.52 .05	50.3 0.4	42.57 .12	68.8 2.2	27.93 .10	68.5 2.1
18.3	49.68 .10	47.2 0.5	23.45 .09	49.9 0.3	42.42 .17	70.8 1.8	27.81 .14	70.5 1.8
28.3	49.56 .13	46.8 0.3	23.35 .12	49.6 0.2	42.24 .20	72.5 1.4	27.66 .17	72.1 1.4
Sept. 7.3	49.42 .15	46.5 −0.2	23.21 .14	49.5 −0.1	42.02 .23	73.7 1.0	27.47 .20	73.3 1.1
17.3	49.27 .16	46.4 0.0	23.06 .16	49.5 0.0	41.78 .25	74.5 0.6	27.26 .22	74.2 0.6
27.2	49.10 .17	46.4 +0.1	22.90 .16	49.5 +0.1	41.53 .25	74.9 +0.1	27.04 .23	74.6 +0.2
Oct. 7.2	48.94 .16	46.6 0.3	22.74 .16	49.7 0.2	41.28 .25	74.7 −0.3	26.81 .23	74.6 −0.2
17.2	48.78 .15	46.9 0.4	22.58 .15	49.9 0.3	41.04 .24	74.2 0.8	26.58 .22	74.2 0.7
27.2	48.65 .12	47.4 0.6	22.45 .12	50.2 0.4	40.81 .21	73.1 1.3	26.37 .20	73.3 1.1
Nov. 6.1	48.55 .09	48.1 0.7	22.34 .09	50.7 0.5	40.61 .18	71.6 1.7	26.19 .17	72.0 1.5
16.1	48.48 −.05	48.8 0.9	22.26 .05	51.2 0.6	40.45 .14	69.7 2.1	26.04 .13	70.3 1.9
26.1	48.45 .00	49.8 1.0	22.23 −.01	51.8 0.7	40.33 .09	67.4 2.5	25.93 .09	68.2 2.3
Dec. 6.0	48.47 +.04	50.8 1.1	22.24 +.03	52.5 0.8	40.26 −.04	64.7 2.8	25.87 −.04	65.8 2.6
16.0	48.53 .09	52.0 1.2	22.30 .08	53.4 0.9	40.25 +.01	61.8 3.0	25.85 +.01	63.1 2.8
26.0	48.64 .13	53.3 1.3	22.40 .12	54.3 0.9	40.29 .07	58.7 3.1	25.89 .06	60.3 2.9
36.0	48.79 +.17	54.6 +1.3	22.54 +.16	55.2 +1.0	40.38 +.12	55.6 −3.2	25.97 +.11	57.3 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*σ* Sagittarii.		*50 Draconis.		*ζ* Aquilæ.		*d* Sagittarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 18 47	° ′ 26 27	h m 18 50	° ′ 75 16	h m 18 59	° ′ 13 40	h m 19 10	° ′ 19 10
	s	″	s	″	s	″	s	″
Jan. 1.0	24.85 +.15	10.7 −0.2	20.22 −.09	55.3 −3.5	35.04 +.10	32.7 −2.1	13.56 +.11	36.4 +0.1
11.0	25.02 .19	10.4 0.2	20.22 +.08	51.8 3.6	35.16 .13	30.6 2.1	13.70 .15	36.5 0.1
20.9	25.22 .22	10.2 0.2	20.38 .24	48.3 3.5	35.31 .17	28.5 2.0	13.87 .19	36.6 +0.1
30.9	25.46 .25	10.0 0.2	20.71 .40	44.9 3.2	35.49 .20	26.6 1.8	14.07 .22	36.7 0.0
Feb. 9.9	25.73 .28	9.8 0.2	21.18 .54	41.9 2.9	35.71 .23	24.9 1.6	14.31 .25	36.7 0.0
19.9	26.02 .30	9.5 0.3	21.78 .66	39.2 2.4	35.95 .25	23.5 1.3	14.57 .27	36.6 −0.1
Mar. 1.8	26.33 .32	9.2 0.3	22.49 .76	37.1 1.9	36.21 .27	22.4 0.9	14.85 .29	36.4 0.2
11.8	26.66 .33	8.9 0.3	23.28 .83	35.5 1.2	36.48 .28	21.6 0.5	15.14 .30	36.2 0.3
21.8	26.99 .34	8.6 0.4	24.13 .87	34.6 −0.6	36.77 .29	21.3 −0.1	15.45 .31	35.8 0.4
31.8	27.33 .34	8.2 0.4	25.01 .88	34.4 +0.1	37.07 .30	21.5 +0.3	15.77 .32	35.3 0.5
Apr. 10.7	27.67 .34	7.8 0.4	25.88 .86	34.8 0.7	37.37 .30	22.0 0.8	16.09 .33	34.7 0.6
20.7	28.01 .34	7.4 0.4	26.72 .81	35.8 1.3	37.67 .30	23.0 1.1	16.42 .32	34.0 0.7
30.7	28.34 .33	7.0 0.4	27.49 .74	37.4 1.9	37.96 .29	24.3 1.4	16.74 .32	33.2 0.8
May 10.6	28.66 .31	6.6 0.3	28.19 .65	39.5 2.4	38.24 .27	25.9 1.7	17.05 .31	32.5 0.8
20.6	28.96 .29	6.3 0.3	28.78 .54	42.1 2.8	38.51 .25	27.7 1.9	17.35 .29	31.7 0.8
30.6	29.24 .26	6.1 0.2	29.25 .41	45.1 3.1	38.75 .23	29.7 2.1	17.63 .27	31.0 0.7
June 9.6	29.49 .23	5.9 −0.1	29.59 .27	48.2 3.3	38.97 .20	31.9 2.2	17.88 .24	30.4 0.6
19.5	29.70 .19	5.9 0.0	29.79 +.12	51.6 3.4	39.15 .16	34.0 2.2	18.11 .20	29.8 0.5
29.5	29.88 .15	6.0 +0.1	29.84 −.03	55.0 3.4	39.29 .12	36.2 2.1	18.29 .17	29.3 0.4
July 9.5	30.01 .11	6.2 0.2	29.74 .17	58.4 3.4	39.40 .08	38.3 2.0	18.43 .12	29.0 0.3
19.5	30.09 .06	6.4 0.3	29.50 .31	61.7 3.2	39.46 +.04	40.3 1.9	18.53 .08	28.8 −0.1
29.4	30.12 +.01	6.8 0.4	29.12 .45	64.8 3.0	39.48 .00	42.0 1.7	18.59 +.03	28.7 0.0
Aug. 8.4	30.11 −.04	7.2 0.4	28.60 .58	67.7 2.7	39.45 −.05	43.6 1.5	18.59 −.02	28.8 +0.1
18.4	30.05 .08	7.6 0.4	27.97 .69	70.2 2.4	39.39 .08	45.0 1.3	18.56 .06	28.9 0.1
28.3	29.95 .12	8.1 0.4	27.23 .78	72.4 2.0	39.29 .12	46.1 1.0	18.48 .10	29.0 0.2
Sept. 7.3	29.82 .15	8.5 0.4	26.41 .86	74.1 1.5	39.15 .15	47.0 0.7	18.36 .13	29.3 0.2
17.3	29.66 .17	8.8 0.3	25.52 .92	75.4 1.0	38.99 .17	47.6 0.4	18.22 .15	29.5 0.3
27.3	29.49 .18	9.1 0.2	24.59 .95	76.2 +0.5	38.82 .18	47.9 +0.1	18.07 .16	29.8 0.2
Oct. 7.2	29.31 .18	9.3 +0.1	23.63 .96	76.5 0.0	38.64 .18	47.9 −0.2	17.90 .17	30.0 0.2
17.2	29.14 .17	9.4 0.0	22.68 .94	76.3 −0.5	38.47 .17	47.6 0.4	17.74 .16	30.2 0.2
27.2	28.98 .14	9.3 −0.1	21.75 .90	75.5 1.1	38.31 .15	47.0 0.7	17.58 .14	30.4 0.2
Nov. 6.2	28.86 .11	9.2 0.2	20.88 .84	74.2 1.6	38.17 .13	46.1 1.0	17.45 .12	30.5 0.1
16.1	28.77 .07	9.0 0.2	20.09 .74	72.3 2.1	38.06 .09	44.9 1.3	17.35 .08	30.7 0.1
26.1	28.72 −.02	8.8 0.3	19.40 .63	70.0 2.5	37.98 .06	43.5 1.6	17.29 −.04	30.8 0.1
Dec. 6.1	28.72 +.02	8.5 0.3	18.84 .50	67.3 2.9	37.95 −.02	41.8 1.8	17.27 .00	30.9 0.1
16.0	28.76 .07	8.2 0.3	18.41 .35	64.2 3.2	37.95 +.03	40.0 1.9	17.29 +.05	31.0 0.1
26.0	28.86 .12	7.9 0.3	18.14 .19	60.8 3.4	38.00 .07	38.0 2.0	17.36 .09	31.1 0.1
36.0	29.00 +.16	7.7 −0.2	18.03 −.02	57.3 −3.6	38.10 +.11	35.9 −2.1	17.47 +.13	31.2 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*δ Draconis.		*τ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	19h 12m	67° 25′	19h 17m	73° 6′	19h 19m	2° 51′	19h 30m	7° 18′
	s	″	s	″	s	″	s	″
Jan. 1.0	27.41 −.07	77.7 −3.5	52.97 −.15	69.8 −3.4	6.67 +.09	47.3 −1.4	4.69 +.09	28.4 +0.8
11.0	27.40 +.04	74.1 3.6	52.89 −.01	66.4 3.5	6.78 .12	45.8 1.4	4.79 .12	29.2 0.8
21.0	27.50 .15	70.6 3.5	52.96 +.14	62.8 3.5	6.92 .16	44.4 1.4	4.93 .16	30.0 0.7
30.9	27.70 .25	67.2 3.3	53.16 .28	59.4 3.3	7.09 .19	43.1 1.2	5.10 .19	30.7 0.6
Feb. 9.9	28.00 .34	64.0 3.0	53.51 .41	56.2 3.0	7.29 .22	42.0 1.1	5.30 .21	31.3 0.5
19.9	28.38 .43	61.2 2.6	53.97 .52	53.4 2.6	7.52 .24	41.0 0.8	5.53 .24	31.7 0.3
Mar. 1.9	28.85 .50	58.9 2.0	54.54 .62	51.0 2.1	7.77 .26	40.3 0.5	5.78 .26	32.0 +0.1
11.8	29.37 .55	57.1 1.5	55.20 .69	49.1 1.6	8.04 .28	39.9 −0.2	6.05 .28	32.0 −0.1
21.8	29.94 .59	56.0 0.8	55.92 .74	47.9 0.9	8.32 .29	39.8 +0.1	6.33 .29	31.8 0.3
31.8	30.54 .60	55.5 −0.2	56.68 .77	47.3 −0.3	8.61 .30	40.1 0.4	6.63 .30	31.3 0.6
Apr. 10.8	31.14 .60	55.7 +0.5	57.45 .77	47.4 +0.4	8.91 .30	40.7 0.7	6.93 .31	30.7 0.8
20.7	31.74 .59	56.5 1.1	58.22 .75	48.1 1.0	9.21 .30	41.6 1.0	7.24 .31	29.8 1.0
30.7	32.31 .55	58.0 1.7	58.94 .70	49.4 1.6	9.51 .30	42.7 1.3	7.55 .31	28.7 1.1
May 10.7	32.84 .50	59.9 2.2	59.61 .64	51.3 2.1	9.80 .29	44.1 1.5	7.85 .30	27.6 1.2
20.6	33.30 .44	62.4 2.7	60.21 .55	53.6 2.6	10.08 .27	45.6 1.6	8.14 .28	26.3 1.3
30.6	33.70 .36	65.2 3.0	60.71 .45	56.4 2.9	10.34 .25	47.3 1.7	8.42 .26	25.0 1.3
June 9.6	34.02 .27	68.4 3.3	61.10 .33	59.5 3.2	10.58 .22	49.0 1.7	8.67 .24	23.7 1.3
19.6	34.25 .18	71.7 3.4	61.37 .21	62.8 3.4	10.79 .19	50.8 1.7	8.89 .21	22.4 1.2
29.5	34.38 +.08	75.2 3.5	61.52 +.08	66.3 3.5	10.95 .15	52.5 1.7	9.08 .17	21.2 1.1
July 9.5	34.41 −.02	78.7 3.5	61.53 −.05	69.8 3.5	11.09 .11	54.1 1.6	9.23 .13	20.2 1.0
19.5	34.34 .12	82.2 3.4	61.42 .18	73.2 3.4	11.18 .07	55.6 1.4	9.34 .09	19.2 0.9
29.5	34.18 .21	85.5 3.2	61.18 .30	76.5 3.2	11.22 +.03	56.9 1.2	9.40 +.04	18.4 0.7
Aug. 8.4	33.92 .30	88.5 2.9	60.82 .42	79.6 3.0	11.23 −.02	58.0 1.1	9.42 .00	17.7 0.6
18.4	33.58 .38	91.3 2.6	60.35 .52	82.5 2.7	11.19 .06	59.0 0.9	9.40 −.04	17.2 0.4
28.4	33.16 .45	93.7 2.2	59.78 .62	85.0 2.3	11.11 .09	59.8 0.7	9.33 .08	16.9 0.3
Sept. 7.3	32.68 .51	95 8 1.8	59.12 .70	87.2 1.9	11.00 .12	60.4 0.5	9.24 .11	16.7 −0.1
17.3	32.14 .56	97.4 1.4	58.39 .76	88.9 1.5	10.87 .15	60.8 0.3	9.11 .14	16.6 0.0
27.3	31.56 .59	98.5 0.8	57.61 .80	90.1 1.0	10.71 .16	60.9 +0.1	8.96 .15	16.6 +0.1
Oct. 7.3	30.97 .60	99.1 +0.3	56.80 .82	90.8 +0.5	10.55 .16	60.9 −0.1	8.81 .16	16.8 0.2
17.2	30.37 .60	99.1 −0.2	55.98 .82	91.0 −0.1	10.39 .16	60.7 0.3	8.65 .16	17.0 0.3
27.2	29.78 .58	98.6 0.8	55.17 .80	90.7 0.6	10.24 .14	60.3 0.5	8.50 .14	17.3 0.4
Nov. 6.2	29.22 .54	97.6 1.3	54.40 .75	89.8 1.2	10.10 .12	59.7 0.7	8.37 .12	17.8 0.5
16.2	28.71 .48	96.0 1.8	53.68 .68	88.3 1.7	10.00 .09	58.9 0.9	8.26 .09	18.3 0.5
26.1	28.26 .41	93.9 2.3	53.03 .60	86.3 2.2	9.92 .06	57.9 1.0	8.18 .06	18.8 0.6
Dec. 6.1	27.89 .33	91.4 2.8	52.49 .49	83.9 2.7	9.89 −.02	56.8 1.2	8.15 −.02	19.5 0.7
16.1	27.61 .23	88.4 3.1	52.06 .37	81.0 3.0	9.89 +.02	55.5 1.3	8.15 +.02	20.2 0.7
26.0	27.43 .13	85.2 3.4	51.76 .24	77.9 3.3	9.94 .06	54.2 1.4	8.19 .06	21.0 0.8
36.0	27.35 −.02	81.8 −3.5	51.59 −.10	74.5 −3.5	10.02 +.10	52.8 −1.4	8.27 +.10	21.8 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (*Altair.*)		*ε Draconis.		β Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$19^h\ 40^m$	$10^\circ\ 18'$	$19^h\ 44^m$	$8^\circ\ 31'$	$19^h\ 48^m$	$69^\circ\ 56'$	$19^h\ 49^m$	$6^\circ\ 5'$
	s	″	s	″	s	″	s	″
Jan. 1.0	14.17 +.06	20.4 −1.8	36.14 +.05	65.9 −1.7	30.99 −.18	45.2 −3.3	5.45 +.05	29.2 −1.5
11.0	14.25 .10	18.6 1.8	36.21 .10	64.3 1.7	30.86 −.07	41.9 3.4	5.52 .09	27.7 1.5
21.0	14.36 .13	16.8 1.7	36.32 .13	62.6 1.6	30.85 +.05	38.4 3.5	5.63 .13	26.2 1.5
31.0	14.51 .16	15.2 1.6	36.47 .16	61.1 1.5	30.96 .17	34.9 3.4	5.77 .16	24.8 1.4
Feb. 9.9	14.69 .19	13.7 1.4	36.65 .19	59.7 1.3	31.19 .28	31.6 3.2	5.95 .19	23.5 1.2
19.9	14.90 .22	12.4 1.1	36.85 .22	58.5 1.0	31.53 .39	28.6 2.8	6.15 .21	22.4 0.9
Mar. 1.9	15.13 .24	11.4 0.8	37.08 .24	57.6 0.7	31.96 .48	26.0 2.4	6.37 .24	21.6 0.7
11.9	15.38 .26	10.8 0.5	37.33 .26	57.1 −0.4	32.48 .55	23.9 1.9	6.62 .26	21.1 −0.3
21.8	15.65 .28	10.5 −0.1	37.60 .28	56.9 0.0	33.06 .61	22.3 1.3	6.89 .28	21.0 0.0
31.8	15.94 .29	10.7 +0.3	37.89 .29	57.0 +0.4	33.69 .65	21.4 −0.6	7.17 .29	21.2 +0.4
Apr. 10.8	16.23 .30	11.2 0.7	38.18 .30	57.6 0.7	34.35 .67	21.1 0.0	7.47 .30	21.8 0.7
20.7	16.54 .30	12.1 1.1	38.49 .30	58.5 1.1	35.02 .66	21.5 +0.7	7.77 .30	22.6 1.0
30.7	16.84 .30	13.3 1.4	38.79 .30	59.7 1.4	35.68 .64	22.4 1.3	8.07 .30	23.8 1.3
May 10.7	17.14 .29	14.8 1.7	39.09 .30	61.3 1.6	36.30 .60	24.0 1.9	8.37 .30	25.3 1.6
20.7	17.42 .28	16.6 1.9	39.38 .28	63.0 1.8	36.87 .54	26.1 2.4	8.66 .29	26.9 1.7
30.6	17.69 .26	18.5 2.0	39.65 .26	64.9 2.0	37.37 .46	28.7 2.8	8.94 .27	28.8 1.9
June 9.6	17.94 .23	20.6 2.1	39.91 .24	66.9 2.0	37.80 .38	31.7 3.1	9.19 .24	30.7 1.9
19.6	18.16 .20	22.7 2.1	40.13 .21	68.9 2.0	38.13 .28	34.9 3.3	9.42 .21	32.6 1.9
29.6	18.34 .17	24.8 2.1	40.32 .17	71.0 2.0	38.35 .18	38.3 3.5	9.62 .18	34.5 1.9
July 9.5	18.49 .12	26.8 2.0	40.47 .13	72.9 1.9	38.47 +.07	41.8 3.6	9.77 .14	36.3 1.8
19.5	18.59 .08	28.8 1.9	40.58 .09	74.8 1.8	38.48 −.05	45.4 3.5	9.89 .09	38.1 1.7
29.5	18.65 +.04	30.6 1.7	40.65 +.04	76.6 1.7	38.38 .15	48.9 3.4	9.96 .05	39.7 1.5
Aug. 8.4	18.67 −.01	32.2 1.5	40.67 .00	78.1 1.4	38.18 .26	52.3 3.3	9.98 +.01	41.1 1.3
18.4	18.64 .05	33.6 1.3	40.64 −.04	79.4 1.2	37.87 .36	55.4 3.0	9.97 −.04	42.3 1.1
28.4	18.57 .09	34.7 1.1	40.58 .08	80.5 1.0	37.46 .44	58.2 2.7	9.91 .08	43.3 0.9
Sept. 7.4	18.46 .12	35.7 0.8	40.49 .11	81.4 0.8	36.98 .52	60.8 2.3	9.82 .11	44.1 0.7
17.3	18.33 .14	36.3 0.6	40.36 .14	82.1 0.5	36.43 .58	62.9 1.9	9.70 .13	44.6 0.4
27.3	18.18 .16	36.8 +0.3	40.21 .16	82.5 +0.3	35.82 .63	64.5 1.4	9.55 .15	44.9 +0.2
Oct. 7.3	18.02 .17	36.9 0.0	40.05 .16	82.6 0.0	35.17 .66	65.7 0.9	9.39 .16	45.0 0.0
17.3	17.85 .17	36.8 −0.2	39.89 .16	82.5 −0.2	34.50 .67	66.4 +0.4	9.23 .16	44.9 −0.2
27.2	17.69 .16	36.4 0.5	39.73 .15	82.2 0.5	33.83 .66	66.5 −0.2	9.07 .15	44.6 0.5
Nov. 6.2	17.54 .13	35.8 0.8	39.58 .13	81.6 0.7	33.18 .64	66.0 0.7	8.93 .13	44.0 0.7
16.2	17.42 .11	34.9 1.0	39.46 .11	80.8 0.9	32.57 .59	65.0 1.3	8.81 .11	43.2 0.9
26.1	17.33 .08	33.8 1.2	39.37 .08	79.8 1.1	32.00 .53	63.4 1.8	8.72 .08	42.2 1.1
Dec. 6.1	17.27 −.04	32.5 1.4	39.31 −.04	78.5 1.3	31.51 .45	61.3 2.3	8.66 .04	41.1 1.2
16.1	17.24 .00	31.0 1.6	39.29 .00	77.1 1.5	31.11 .36	58.8 2.8	8.63 −.01	39.8 1.4
26.1	17.26 +.04	29.3 1.7	39.31 +.04	75.6 1.6	30.80 .25	55.8 3.1	8.65 +.03	38.4 1.5
36.0	17.32 +.08	27.6 −1.8	39.36 +.08	74.0 −1.6	30.60 −.14	52.6 −3.3	8.70 +.07	36.9 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		α² Capricorni.		*κ Cephei.		α Pavonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 57	° ′ 6 55	h m 20 11	° ′ 12 55	h m 20 12	° ′ 77 19	h m 20 15	° ′ 57 8
	s	″	s	″	s	″	s	″
Jan. 1.0	57.12 +.05	18.6 −1.5	1.76 +.05	71.5 +0.4	59.20 −.46	49.9 −3.0	37.42 +.04	24.3 −2.2
11.0	57.19 .08	17.1 1.5	1.83 .09	71.8 0.3	58.83 .28	46.7 3 3	37.49 .11	22.1 2.3
21.0	57.29 .12	15.6 1.5	1.93 .12	72.1 0.3	58.64 −.09	43.4 3.4	37.64 .18	19.7 2.4
31.0	57.42 .15	14.1 1.4	2.07 .15	72.3 +0.2	58.64 +.10	40.0 3.4	37.84 .24	17.3 2.4
Feb. 9.9	57.59 .18	12.8 1.2	2.23 .18	72.4 0.0	58.83 .29	36.6 3.3	38.11 .30	14.9 2.4
19.9	57.78 .21	11.8 0.9	2.43 .21	72.4 −0.1	59.21 .46	33.5 3.0	38.43 .35	12.6 2.3
Mar. 1.9	58.00 .23	11.0 0.7	2.65 .24	72.2 0.3	59.75 .62	30.7 2.6	38.81 .39	10.4 2.2
11.9	58.24 .25	10.5 −0.3	2.90 .26	71.8 0.5	60.44 .76	28.3 2.2	39.22 .44	8.3 2.0
21.8	58.50 .27	10.3 0.0	3.17 .28	71.3 0.6	61.26 .87	26.4 1.6	39.68 .47	6.4 1.8
31.8	58.78 .29	10.5 +0.4	3.45 .29	70.5 0.8	62.17 .94	25.1 1.0	40.16 .50	4.7 1.6
Apr. 10.8	59.07 .30	11.1 0.7	3.75 .31	69.6 1.0	63.13 .99	24.4 −0.4	40.67 .52	3.2 1.3
20.7	59.37 .30	12.0 1.0	4 07 .32	68.6 1.1	64.13 1.00	24.4 +0.3	41.20 .53	2.0 1.0
30.7	59.68 .30	13.2 1.3	4.39 .32	67.4 1.2	65.12 .98	25.0 0.9	41.73 .54	1.2 0.7
May 10.7	59.98 .30	14.6 1.6	4.71 .32	66.1 1.3	66.07 .92	26.2 1.5	42.27 .53	0.7 −0.4
20.7	60.28 .29	16.3 1.8	5.02 .31	64.8 1.3	66.96 .84	28.0 2.0	42.79 .52	0.5 0.0
30.6	60.56 .27	18.2 1.9	5.32 .30	63.5 1.3	67.75 .73	30.2 2.5	43 29 .49	0.6 +0.3
June 9.6	60.82 .25	20.1 2.0	5.61 .27	62.3 1.2	68.42 .61	32.9 2.9	43.76 .45	1.1 0.7
19.6	61.05 .22	22.1 2.0	5.87 .25	61.1 1.1	68.95 .46	36.0 3.2	44.19 .40	2.0 1.0
29.6	61.25 .18	24.1 2.0	6.10 .21	60.1 1.0	69.34 .30	39.3 3.4	44.57 .35	3.2 1.3
July 9.5	61.42 .14	26.1 1.9	6.29 .17	59.2 0.8	69.56 +.14	42.8 3.5	44.88 .28	4.6 1.6
19.5	61.54 .10	27.9 1.8	6.44 .13	58.4 0.7	69.61 −.03	46.3 3.6	45.13 .21	6.3 1.8
29.5	61.62 .06	29.6 1.6	6.55 .08	57.8 0.5	69.50 .20	49.9 3.5	45.29 .13	8.1 1.9
Aug. 8.4	61.65 +.01	31.1 1.4	6.61 +.04	57.4 0.3	69.22 .36	53.4 3.4	45.38 +.05	10.1 2.0
18.4	61.64 −.03	32.4 1.2	6.62 −.01	57.1 −0.2	68.78 .51	56.7 3.2	45.39 −.03	12.2 2.0
28.4	61.59 .07	33.4 1.0	6.59 .05	57.0 0.0	68.20 .65	59.8 3.0	45.33 .10	14.2 2.0
Sept. 7.4	61.50 .10	34.3 0.7	6.52 .09	57.0 +0.1	67.48 .78	62.6 2.7	45.19 .17	16.0 1.8
17.3	61.38 .13	34.9 0.5	6.42 .12	57.2 0.2	66.65 .89	65.1 2.3	44.99 .23	17.7 1.6
27.3	61.24 .15	35.3 +0.3	6.29 .14	57.4 0.3	65.72 .97	67.2 1.9	44.74 .27	19.2 1.3
Oct. 7.3	61.09 .16	35.5 0.0	6.15 .15	57.7 0.3	64.71 1.03	68.8 1.4	44.45 .30	20.3 0.9
17.3	60.93 .16	35.4 −0.2	6.00 .15	58.0 0.3	63.65 1.07	69.9 0.8	44.15 .31	21.0 0.5
27.2	60.77 .15	35.1 0.4	5.84 .15	58.4 0.4	62.57 1.08	70.5 +0.3	43.84 .30	21.3 +0.1
Nov. 6.2	60.63 .13	34.5 0.6	5.70 .13	58.7 0.4	61.50 1.06	70.6 −0.3	43.55 .28	21.2 −0.3
16.2	60.50 .11	33.8 0.8	5.58 .11	59.1 0.4	60.46 1.02	70.0 0.8	43.28 .24	20.7 0.8
26.1	60.40 .08	32.9 1.0	5:48 .08	59.5 0.4	59.48 .94	68.9 1.4	43.06 .20	19.7 1.2
Dec. 6.1	60.34 .05	31.7 1.2	5.42 .05	59.9 0.4	58.58 .84	67.2 1.9	42.89 .14	18.3 1.5
16.1	60.31 −.01	30.4 1.4	5.39 −.01	60.3 0.4	57.81 .71	65.1 2.4	42.79 −.07	16.7 1.8
26.1	60.31 +.02	29.0 1.5	5.40 +.03	60.7 0.4	57.17 .56	62.5 2.8	42.75 .00	14.7 2.1
36.0	60.36 +.06	27.5 −1.4	5.45 +.06	61.0 +0.3	56.69 −.39	59.5 −3.2	42.79 +.07	12.6 −2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Capricorni.		ε Delphini.		*Groombridge 3241.		α Cygni.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 20	° ′ 18 37	h m 20 27	° ′ 10 52	h m 20 30	° ′ 72 5	h m 20 37	° ′ 44 49
	s	″	s	″	s	″	s	″
Jan. 1.1	4.47 +.04	33.7 0.0	9.66 −.01	28.1 −1.6	27.41 −.33	77.9 −2.9	5.81 −.07	49.7 −2.7
11.0	4.53 .08	33.7 −0.1	9.69 +.05	26.5 1.6	27.14 .21	74.8 3.2	5.77 −.02	46.9 2.9
21.0	4.63 .12	33.6 0.1	9.76 .08	24.9 1.6	26.99 −.09	71.5 3.4	5.77 +.03	43.9 3.0
31.0	4.76 .15	33.5 0.2	9 86 .12	23.3 1.5	26.97 +.05	68.1 3.4	5.83 .08	40.9 3.0
Feb. 10.0	4.93 .18	33.2 0.3	9.99 .15	21.9 1.3	27.08 .18	64.7 3.3	5.93 .13	38.0 2.8
19.9	5.12 .21	32.8 0.5	10.16 .18	20.6 1.1	27.33 .31	61.5 3.1	6.09 .18	35.3 2.6
Mar. 1.9	5.35 .24	32.3 0.6	10.35 .21	19.6 0.8	27.69 .42	58.6 2.7	6.29 .23	32.9 2.2
11.9	5.59 .26	31.6 0.7	10.57 .23	19.0 0.5	28.16 .52	56.1 2.3	6.54 .27	30.9 1.8
21.9	5.86 .28	30.8 0.9	10.82 .26	18.7 −0.1	28.73 .61	54.1 1.7	6.83 .30	29.4 1.3
31.8	6.15 .30	29.9 1.0	11.08 .28	18.7 +0.3	29.38 .67	52.7 1.1	7.15 .33	28.4 0.7
Apr. 10.8	6.46 .31	28.8 1.1	11.37 .29	19.2 0.6	30.07 .72	51.9 −0.5	7.49 .36	28.0 −0.1
20.8	6.78 .32	27.7 1.2	11.66 .30	20.0 1.0	30.80 .74	51.7 +0.1	7.86 .37	28.2 +0.5
30.7	7.10 .33	26.5 1.2	11.97 .31	21.2 1.4	31.54 .73	52.1 0.8	8.23 .38	29.0 1.1
May 10.7	7.43 .33	25.2 1.2	12.28 .31	22.7 1.6	32.26 .71	53.2 1.4	8.61 .37	30.3 1.6
20.7	7.76 .32	24.0 1.2	12.58 .30	24.5 1.9	32.95 .66	54.9 1.9	8.98 .36	32.2 2.1
30.7	8.08 .31	22.9 1.1	12.88 .29	26.4 2.0	33.58 .59	57.1 2.4	9.32 .34	34.5 2.5
June 9.6	8.38 .29	21.8 1.0	13.15 .27	28.5 2.2	34.13 .51	59.7 2.8	9.64 .31	37.1 2 8
19.6	8.65 .26	20.8 0.9	13.41 .24	30.8 2.2	34.59 .41	62.7 3.1	9.93 .27	40.1 3.1
29.6	8.90 .23	20.0 0.7	13.63 .21	33.0 2.2	34.95 .30	66.0 3.4	10.18 .22	43.3 3.2
July 9.6	9.10 .19	19.4 0.5	13.82 .17	35.1 2.1	35.20 .19	69.4 3.5	10.37 .17	46.6 3.3
19.5	9.27 .14	18.9 0.4	13.96 .12	37.2 2.0	35.33 +.07	73.0 3.6	10.51 .11	49.9 3.3
29.5	9.39 .10	18.6 −0.2	14.06 .08	39.2 1.9	35.33 −.05	76.7 3.6	10.60 +.06	53.2 3.3
Aug. 8.5	9.46 +.05	18.5 0.0	14.12 +.03	41.0 1.7	35.22 .17	80.2 3.5	10.63 .00	56.4 3.1
18.4	9.49 .00	18.6 +0.1	14.14 −.01	42.6 1.5	34.99 .29	83.7 3.4	10.60 −.06	59.5 2.9
28.4	9.47 −.04	18.8 0.2	14.11 .05	44.0 1.3	34.65 .39	87.0 3.1	10.52 .11	62.3 2.7
Sept. 7.4	9.40 .08	19.1 0.3	14.04 .09	45.1 1.0	34.21 .49	89.9 2.8	10.38 .16	64.8 2.4
17.4	9.30 .11	19.5 0.4	13.94 .11	46.0 0.8	33.68 .57	92.6 2.5	10.21 .19	67.0 2.0
27.3	9.18 .14	19.9 0.4	13.81 .14	46.6 0.5	33.07 .64	94.9 2.0	10.00 .23	68.8 1.6
Oct. 7.3	9.03 .15	20.3 0.4	13.66 .15	46.9 +0.2	32.40 .69	96.7 1.6	9.76 .25	70.2 1.2
17.3	8.88 .16	20.8 0.4	13.51 .16	47.0 0.0	31.70 .72	98.0 1.1	9.50 .26	71.1 0.7
27.3	8.72 .15	21.2 0.4	13.35 .16	46.9 −0.3	30.97 .74	98.8 +0.5	9.24 .26	71.6 +0.2
Nov. 6.2	8.58 .14	21.5 0.3	13.20 .14	46.5 0.5	30.23 .73	99.0 −0.1	8.98 .25	71.5 −0.3
16.2	8.45 .12	21.8 0.3	13.06 .13	45.8 0.8	29.51 .70	98.7 0.6	8.74 .24	70.9 0.8
26.2	8.35 .09	22.1 0.2	12.95 .10	44.9 1.0	28.83 .66	97.8 1.2	8.51 .21	69.9 1.3
Dec. 6.1	8.28 .05	22.3 0.2	12.86 .07	43.8 1.2	28.21 .59	96.3 1.8	8.32 .18	68.4 1.8
16.1	8.24 −.02	22.4 +0.1	12.81 −.04	42.4 1.4	27.66 .50	94.3 2.3	8.16 .14	66.4 2.2
26.1	8.24 +.02	22.5 0.0	12.79 .00	41.0 1.5	27.21 .40	91.8 2.7	8.04 .10	64.0 2.5
36.1	8.28 +.06	22.5 0.0	12.80 +.03	39.4 −1.6	26.86 −.29	88.9 −3.0	7.97 −.05	61.4 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*μ* Aquarii.		*ν* Cygni.		*12 Year Cat. 1879.		61 Cygni (*pr.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 45	° ′ 9 27	h m 20 52	° ′ 40 40	h m 20 53	° ′ 80 4	h m 21 1	° ′ 38 7
	s	″	s	″	s	″	s	″
Jan. 1.1	49.52 +.02	26.2 +0.5	26.32 −.07	58.6 −2.5	6.31 −.80	44.9 −2.6	12.90 −.06	50.2 −2.3
11.1	49.55 .05	26.7 0.5	26.27 −.02	55.9 2.7	5.62 .59	42.1 3.0	12.86 −.02	47.9 2.5
21.0	49.61 .08	27.1 0.4	26.27 +.02	53.2 2.8	5.14 .36	39.0 3.2	12.86 +.02	45.3 2.6
31.0	49.71 .11	27.4 0.3	26.31 .07	50.3 2.8	4.90 −.12	35.7 3.3	12.91 .07	42.6 2.6
Feb. 10.0	49.84 .14	27.6 +0.1	26.40 .11	47.6 2.7	4.90 +.12	32.4 3.3	13.00 .11	40.1 2.5
20.0	50.00 .17	27.7 0.0	26.53 .16	45.0 2.5	5.14 .36	29.1 3.2	13.13 .16	37.7 2.3
Mar. 1.9	50.19 .20	27.5 −0.2	26.71 .20	42.7 2.1	5.61 .58	26.1 2.9	13.31 .20	35.5 2.0
11.9	50.40 .23	27.2 0.5	26.93 .24	40.7 1.7	6.30 .78	23.4 2.5	13.52 .24	33.7 1.6
21.9	50.64 .25	26.6 0.7	27.19 .28	39.3 1.2	7.17 .96	21.1 2.0	13.78 .27	32.4 1.1
31.8	50.91 .27	25.9 0.9	27.49 .31	38.3 0.7	8.20 1.09	19.3 1.5	14.07 .30	31.5 −0.6
Apr. 10.8	51.19 .29	24.9 1.1	27.81 .33	37.9 −0.1	9.34 1.19	18.1 0.9	14.39 .33	31.2 0.0
20.8	51.49 .31	23.7 1.3	28.15 .35	38.1 +0.4	10.56 1.24	17.5 −0.3	14.73 .35	31.5 +0.5
30.8	51.80 .32	22.4 1.4	28.51 .36	38.8 1.0	11.81 1.25	17.6 +0.4	15.09 .36	32.3 1.0
May 10.7	52.12 .32	20.9 1.5	28.87 .36	40.0 1.5	13.04 1.22	18.3 1.0	15.45 .36	33.6 1.5
20.7	52.44 .32	19.4 1.5	29.23 .35	41.8 2.0	14.23 1.15	19.5 1.5	15.81 .36	35.4 2.0
30.7	52.75 .31	17.9 1.6	29.57 .34	44.0 2.4	15.33 1.04	21.3 2.1	16.16 .34	37.6 2.4
June 9.7	53.05 .29	16.3 1.5	29.90 .31	46.5 2.7	16.30 .90	23.6 2.5	16.49 .32	40.1 2.7
19.6	53.33 .26	14.9 1.4	30.19 .27	49.4 3.0	17.13 .74	26.4 2.9	16.80 .29	43.0 3.0
29.6	53.58 .23	13.5 1.3	30.44 .23	52.4 3.1	17.78 .56	29.4 3.2	17.07 .25	46.1 3.2
July 9.6	53.79 .20	12.2 1.2	30.65 .19	55.6 3.2	18.24 .37	32.8 3.4	17.30 .20	49.3 3.3
19.5	53.97 .16	11.1 1.0	30.81 .14	58.9 3.3	18.51 +.16	36.3 3.6	17.48 .16	52.6 3.3
29.5	54.11 .11	10.3 0.8	30.92 .08	62.1 3.2	18.56 −.05	39.9 3.6	17.61 .11	55.8 3.2
Aug. 8.5	54.20 .07	9.6 0.6	30.98 +.03	65.2 3.1	18.41 .25	43.5 3.6	17.69 +.05	59.0 3.1
18.5	54.25 +.02	9.1 0.4	30.98 −.02	68.2 2.9	18.06 .45	47.1 3.5	17.72 .00	62.0 2.9
28.4	54.24 −.02	8.7 0.3	30.93 .08	71.0 2.7	17.51 .64	50.5 3.4	17.69 −.05	64.9 2.7
Sept. 7.4	54.20 .06	8.6 −0.1	30.83 .12	73.5 2.4	16.77 .82	53.8 3.1	17.62 .09	67.4 2.4
17.4	54.13 .09	8.5 +0.1	30.69 .16	75.7 2.0	15.88 .97	56.7 2.8	17.51 .13	69.6 2.1
27.4	54.02 .12	8.7 0.2	30.51 .19	77.5 1.6	14.84 1.11	59.4 2.4	17.36 .16	71.5 1.7
Oct. 7.3	53.89 .13	8.9 0.3	30.31 .21	78.9 1.2	13.67 1.22	61.6 2.0	17.18 .19	73.1 1.3
17.3	53.75 .15	9.2 0.4	30.09 .23	79.9 0.8	12.41 1.30	63.4 1.5	16.99 .20	74.2 0.9
27.3	53.61 .15	9.6 0.4	29.85 .23	80.5 +0.3	11.09 1.35	64.6 1.0	16.78 .21	74.8 +0.4
Nov. 6.2	53.46 .14	10.0 0.4	29.62 .23	80.5 −0.2	9.73 1.36	65.3 +0.4	16.57 .21	75.0 0.0
16.2	53.34 .12	10.5 0.5	29.40 .21	80.1 0.7	8.37 1.34	65.5 −0.1	16.37 .19	74.8 −0.5
26.2	53.23 .09	11.0 0.5	29.20 .19	79.2 1.1	7.05 1.29	65.0 0.7	16.19 .17	74.1 0.9
Dec. 6.2	53.15 .07	11.5 0.5	29.02 .16	77.9 1.6	5.81 1.20	64.0 1.3	16.03 .15	72.9 1.4
16.1	53.10 .04	12.0 0.5	28.87 .13	76.1 2.0	4.67 1.07	62.4 1.9	15.89 .12	71.3 1.7
26.1	53.08 −.01	12.5 0.5	28.76 .09	73.9 2.3	3.68 .91	60.3 2.3	15.79 .08	69.4 2.1
36.1	53.09 +.03	13.0 +0.5	28.68 −.05	71.5 −2.6	2.87 −.72	57.8 −2.7	15.73 −.04	67.1 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Cygni.		α Cephei.		1 Pegasi.		β Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$21^{\mathrm{h}}\ 7^{\mathrm{m}}$	$29^{\circ}\ 42'$	$21^{\mathrm{h}}\ 15^{\mathrm{m}}$	$62^{\circ}\ 2'$	$21^{\mathrm{h}}\ 16^{\mathrm{m}}$	$19^{\circ}\ 15'$	$21^{\mathrm{h}}\ 24^{\mathrm{m}}$	$6^{\circ}\ 7'$
	s	″	s	″	s	″	s	″
Jan. 1.1	32.45 −.05	37.6 −2.1	31.10 −.24	69.5 −2.5	13.81 −.04	56.1 −1.7	53.82 −.02	36.6 +0.6
11.1	32.42 −.02	35.4 2.3	30.89 .17	66.8 2.9	13.79 −.01	54.3 1.8	53.82 +.01	37.2 0.6
21.1	32.42 +.02	33.1 2.4	30.75 .10	63.8 3.1	13.80 +.03	52.5 1.9	53.84 .04	37.7 0.5
31.0	32.46 .06	30.7 2.4	30.69 −.02	60.6 3.2	13.84 .06	50.6 1.8	53.90 .07	38.1 0.4
Feb. 10.0	32.54 .10	28.4 2.3	30.72 +.06	57.4 3.2	13.92 .10	48.8 1.7	53.99 .10	38.4 +0.2
20.0	32.66 .14	26.2 2.0	30.82 .14	54.2 3.0	14.04 .13	47.2 1.5	54.10 .13	38.6 0.0
Mar. 1.9	32 82 .17	24.4 1.7	31.01 .23	51.3 2.9	14.19 .16	45.8 1.2	54.25 .16	38.5 −0.2
11.9	33.01 .21	22.8 1.4	31.27 .30	48.6 2.4	14.36 .20	44.7 0.9	54.43 .19	38.2 0.4
21.9	33.24 .24	21.6 0.9	31.61 .37	46.4 2.0	14.57 .23	44.0 0.5	54.63 .22	37.7 0.6
31.9	33.50 .27	21.0 −0.4	32.00 .42	44.7 1.4	14.82 .26	43.7 −0.1	54.87 .25	37.0 0.9
Apr. 10.8	33.78 .30	20.8 0.0	32.45 .47	43.6 0.8	15.09 .28	43.8 +0.3	55.13 .27	36.0 1.1
20.8	34.09 .32	21.1 +0.6	32.94 .50	43.0 −0.2	15.37 .30	44.4 0.8	55.41 .29	34.8 1.3
30.8	34.41 .33	21.9 1.0	33.45 .52	43.1 +0.4	15.68 .31	45.3 1.2	55.71 .31	33.3 1.5
May 10.8	34.75 .33	23.1 1.5	33.97 .52	43.9 1.0	16.00 .32	46.7 1.5	56.02 .32	31.8 1.6
20.7	35.08 .33	24.9 1.9	34.49 .51	45.2 1.6	16.31 .32	48.4 1.9	56.34 .32	30.1 1.7
30.7	35.40 .32	26.9 2.3	34.99 .48	47.0 2.1	16.63 .31	50.4 2.1	56.66 .32	28.3 1.8
June 9.7	35.72 .30	29.3 2.5	35.45 .44	49.4 2.6	16.94 .30	52.7 2.3	56.97 .30	26.5 1.8
19.6	36.00 .27	32.0 2.7	35.87 .39	52.1 2.9	17.22 .27	55.1 2.5	57.26 .28	24.8 1.7
29.6	36.26 .24	34.8 2.9	36.23 .33	55.2 3.2	17.48 .24	57.6 2.6	57.54 .26	23.1 1.6
July 9.6	36.48 .20	37.7 2.9	36.52 .26	58.6 3.5	17.71 .21	60.2 2.6	57.78 .23	21.6 1.5
19.6	36.66 .16	40.6 2.9	36.74 .18	62.1 3.6	17.90 .17	62.7 2.5	57.99 .19	20.2 1.3
29.5	36.79 .11	43.5 2.8	36.89 .10	65.7 3.7	18.04 .12	65.2 2.4	58.16 .15	19.0 1.1
Aug. 8.5	36.87 .06	46.3 2.7	36.95 +.02	69.4 3.6	18.14 .08	67.5 2.3	58.28 .10	18.0 0.9
18.5	36.91 +.01	48.9 2.5	36.93 −.06	73.0 3.5	18.20 +.03	69.7 2.1	58.36 .06	17.2 0.7
28.5	36.90 −.03	51.3 2.3	36.83 .14	76.4 3.4	18.21 −.01	71.7 1.9	58.40 +.01	16.6 0.5
Sept. 7.4	36.84 .08	53.5 2.0	36.66 .21	79.7 3.1	18.18 .05	73.4 1.6	58.39 −.03	16.3 0.3
17.4	36.75 .11	55.3 1.7	36.42 .27	82.6 2.8	18.11 .09	74.8 1.3	58.35 .06	16.1 −0.1
27.4	36.62 .14	56.9 1.4	36.12 .32	85.3 2.4	18.00 .12	76.0 1.0	58.27 .09	16.0 0.0
Oct. 7.3	36.46 .17	58.1 1.0	35.78 .37	87.5 2.0	17.88 .14	76.9 0.7	58.17 .11	16.2 +0.2
17.3	36.29 .18	58.9 0.6	35.39 .40	89.3 1.5	17.73 .15	77.4 0.4	58.05 .13	16.4 0.3
27.3	36.11 .18	59.3 +0.2	34.98 .42	90.5 1.0	17.58 .16	77.7 +0.1	57.91 .13	16.8 0.4
Nov. 6.3	35.93 .18	59.4 −0.2	34.55 .43	91.3 +0.5	17.42 .15	77.6 −0.2	57.78 .13	17.2 0.5
16.2	35.75 .17	59.0 0.6	34.13 .42	91.4 −0.1	17.27 .14	77.2 0.5	57.65 .12	17.7 0.5
26.2	35.59 .15	58.2 1.0	33.72 .40	91.0 0.7	17.13 .13	76.5 0.9	57.54 .11	18.3 0.6
Dec. 6.2	35.45 .13	57.1 1.3	33.33 .37	90.1 1.3	17.02 .11	75.5 1.1	57.44 .09	18.9 0.6
16.2	35.33 .10	55.6 1.7	32.98 .33	88.6 1.8	16.92 .08	74.3 1.4	57.37 .06	19.5 0.6
26.1	35.24 .07	53.8 2.0	32.68 .27	86.5 2.3	16.85 .05	72.8 1.5	57.31 .04	20.1 0.6
36.1	35.19 −.04	51.7 −2.2	32.43 −.22	84.1 −2.7	16.81 −.03	71.1 −1.7	57.29 −.01	20.7 +0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Cephei.		ξ Aquarii.		ε Pegasi.		*11 Cephei.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 21 26	° ′ 70 0	h m 21 31	° ′ 8 24	h m 21 37	° ′ 9 17	h m 21 39	° ′ 70 43
	s	″	s	″	s	″	s	″
Jan. 1.1	57.49 −.41	31.8 −2.4	0.92 −.02	75.2 +0.5	58.20 −.04	48.3 −1.2	60.07 −.44	58.4 −2.2
11.1	57.13 .31	29.2 2.8	0.91 +.01	75.7 0.4	58.17 −.01	47.0 1.3	59.67 .36	56.0 2.7
21.1	56.87 .21	26.3 3.1	0.93 .04	76.1 0.3	58.18 +.02	45.7 1.3	59.36 .25	53.2 3.0
31.0	56.72 −.10	23.1 3.2	0.98 .07	76.3 0.2	58.21 .05	44.4 1.2	59.16 .14	50.1 3.2
Feb. 10.0	56.68 +.02	19.8 3.3	1.07 .10	76.5 +0.1	58.27 .08	43.2 1.1	59.08 −.02	46.8 3.3
20.0	56.75 .13	16.6 3.1	1.18 .13	76.5 −0.1	58.37 .11	42.2 0.9	59.12 +.10	43.6 3.2
Mar. 1.9	56.95 .25	13.4 3.0	1.32 .16	76.3 0.3	58.50 .14	41.4 0.7	59.28 .22	40.5 3.0
11.9	57.25 .35	10.6 2.7	1.50 .19	75.8 0.5	58.66 .17	40.8 0.4	59.56 .33	37.6 2.7
21.9	57.65 .45	8.2 2.2	1.70 .22	75.2 0.8	58.85 .20	40.6 −0.1	59.94 .44	35.0 2.3
31.9	58.15 .53	6.2 1.7	1.93 .24	74.3 1.0	59.07 .23	40.7 +0.3	60.43 .53	32.9 1.8
Apr. 10.8	58.72 .60	4.8 1.1	2.19 .27	73.2 1.2	59.32 .26	41.1 0.6	60.99 .60	31.4 1.3
20.8	59.34 .65	4.0 −0.5	2.47 .29	71.9 1.4	59.59 .28	41.9 0.9	61.63 .66	30.4 −0.7
30.8	60.01 .67	3.8 +0.2	2.77 .31	70.5 1.5	59.88 .30	43.0 1.3	62.31 .69	30.0 0.0
May 10.8	60.69 .68	4.2 0.7	3.08 .32	68.9 1.7	60.19 .31	44.4 1.6	63.01 .70	30.3 +0.6
20.7	61.36 .66	5.3 1.3	3.40 .32	67.2 1.7	60.50 .32	46.1 1.8	63.71 .69	31.2 1.2
30.7	62.01 .63	6.9 1.9	3.72 .32	65.4 1.8	60.82 .31	48.0 2.0	64.39 .67	32.6 1.7
June 9.7	62.62 .58	9.0 2.4	4.04 .31	63.7 1.7	61.13 .30	50.1 2.1	65.03 .62	34.6 2.2
19.6	63.16 .51	11.6 2 8	4.34 .29	62.0 1.6	61.42 .28	52.3 2.2	65.62 .55	37.1 2.7
29.6	63.63 .43	14.5 3.1	4.62 .27	60.4 1.5	61.70 .26	54.5 2.2	66.13 .47	39.9 3.1
July 9.6	64.01 .34	17.8 3.4	4.87 .23	58.9 1.4	61.94 .23	56.7 2.2	66.56 .38	43.1 3.3
19.6	64.30 .23	21.3 3.6	5.08 .20	57.6 1.2	62.15 .19	58.9 2.1	66.89 .28	46.6 3.6
29.5	64.48 .13	25.0 3.7	5.26 .15	56.5 1.0	62.32 .15	60.9 2.0	67.11 .17	50.2 3.7
Aug. 8.5	64.56 +.02	28.7 3.7	5.39 .11	55.7 0.8	62.45 .11	62.8 1.8	67.23 +.06	54.0 3.7
18.5	64.53 −.08	32.4 3.7	5.48 .06	55.0 0.6	62.53 .06	64.5 1.6	67.24 −.05	57.7 3.7
28.5	64.40 .18	36.0 3.5	5.52 +.02	54.5 0.4	62.57 +.02	66.0 1.4	67.14 .15	61.4 3.6
Sept. 7.4	64.16 .28	39.4 3.3	5.52 −.02	54.3 −0.2	62.57 −.02	67.3 1.1	66.93 .25	64.9 3.4
17.4	63.84 .37	42.6 3.0	5.48 .06	54.2 0.0	62.53 .06	68.3 0.9	66.63 .35	68.2 3.2
27.4	63.43 .44	45.5 2.7	5.41 .09	54.3 +0.2	62.46 .09	69.1 0.7	66.24 .43	71.2 2.9
Oct. 7.3	62.95 .51	48.0 2.3	5.31 .11	54.5 0.3	62.36 .11	69.6 0.4	65.78 .50	73.9 2.5
17.3	62.41 .56	50.1 1.8	5.19 .13	54.8 0.4	62.24 .13	69.9 +0.2	65.25 .56	76.2 2.0
27.3	61.84 .59	51.7 1.3	5.06 .13	55.2 0.5	62.11 .14	70.0 −0.1	64.67 .60	78.0 1.5
Nov. 6.3	61.23 .61	52.8 0.8	4.93 .13	55.7 0.5	61.97 .14	69.8 0.3	64.06 .62	79.2 1.0
16.2	60.62 .61	53.3 +0.2	4.80 .12	56.2 0.5	61.84 .13	69.4 0.5	63.43 .63	79.9 +0.4
26.2	60.01 .60	53.2 −0.4	4.68 .11	56.8 0.5	61.71 .12	68.9 0.7	62.80 .62	80.0 −0.2
Dec. 6.2	59.43 .57	52.5 1 0	4.58 .09	57.3 0.5	61.60 .10	68.1 0.9	62.19 .59	79.6 0.8
16.2	58.89 .52	51.2 1.6	4.51 .07	57.9 0.5	61.52 .08	67.1 1.0	61.62 .55	78.5 1.3
26.1	58.40 .45	49.4 2.1	4 45 .04	58.4 0.5	61.45 .05	66.0 1.2	61.10 .48	76.9 1.9
36.1	58.00 −.36	47.1 −2.5	4.43 −.01	58.9 +0.5	61.41 −.03	64.8 −1.3	60.65 −.40	74.7 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Capricorni.		*79 Draconis.		α Aquarii.		α Gruis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 21 46	° ′ 14 8	h m 21 51	° ′ 73 6	h m 21 59	° ′ 0 55	h m 22 0	° ′ 47 33
	s	″	s	″	s	″	s	″
Jan. 1.1	23.92 −.03	48.1 +0.2	13.42 −.54	29.2 −2.1	17.16 −.04	60.0 +0.8	15.29 −.09	90.6 −1.3
11.1	23.90 −.01	48.2 +0.1	12.92 .45	26.9 2.5	17.13 −.02	60.8 0.8	15.22 −.05	89.1 1.6
21.1	23.91 +.02	48.3 0.0	12.53 .34	24.2 2.9	17.13 +.01	61.5 0.7	15.20 .00	87.3 1.9
31.0	23.95 .05	48.2 −0.2	12.26 .21	21.2 3.1	17.15 .03	62.2 0.6	15.21 +.04	85.3 2.1
Feb. 10.0	24.02 .09	47.9 0.3	12.11 −.07	18.0 3.2	17.19 .06	62.7 0.5	15.28 .09	83.1 2.3
20.0	24.12 .12	47.5 0.5	12.11 +.06	14.7 3.2	17.27 .09	63.1 0.3	15.39 .13	80.7 2.5
Mar. 2.0	24.26 .15	46.9 0.7	12.24 .20	11.6 3.1	17.38 .13	63.3 +0.1	15.54 .18	78.2 2.6
11.9	24.42 .18	46.1 0.9	12.51 .34	8.6 2.8	17.53 .16	63.2 −0.2	15.74 .22	75.6 2.6
21.9	24.61 .21	45.1 1.1	12.91 .46	5.9 2.5	17.70 .19	62.9 0.4	15.99 .27	73.0 2.6
31.9	24.84 .24	44.0 1.3	13.43 .57	3.7 2.0	17.90 .22	62.4 0.7	16.28 .31	70.4 2.5
Apr. 10.9	25.09 .27	42.6 1.4	14.04 .66	2.0 1.4	18.14 .25	61.5 1.0	16.60 .34	67.9 2.4
20.8	25.37 .29	41.1 1.6	14.73 .72	0.8 0.9	18.40 .27	60.4 1.2	16.96 .38	65.6 2.3
30.8	25.67 .31	39.5 1.7	15.48 .77	0.3 −0.2	18.68 .29	59.0 1.5	17.36 .40	63.4 2.1
May 10.8	25.98 .32	37.8 1.7	16.26 .79	0.4 +0.4	18.98 .31	57.4 1.7	17.77 .43	61.5 1.8
20.7	26.31 .33	36.0 1.8	17.04 .78	1.0 1.0	19.30 .32	55.7 1.8	18.21 .44	59.8 1.5
30.7	26.64 .33	34.3 1.7	17.81 .75	2.3 1.6	19.62 .32	53.8 1.9	18.65 .44	58.5 1.2
June 9.7	26.97 .32	32.6 1.7	18.54 .70	4.1 2.1	19.93 .31	51.8 2.0	19.09 .43	57.5 0.8
19.7	27.28 .31	31.0 1.5	19.21 .63	6.5 2.5	20.24 .30	49.9 2.0	19.51 .42	56.8 0.4
29.6	27.57 .28	29.6 1.4	19.81 .55	9.2 2.9	20.53 .28	47.9 1.9	19.91 .39	56.6 −0.1
July 9.6	27.84 .25	28.3 1.2	20.31 .45	12.3 3.3	20.79 .25	46.1 1.8	20.28 .35	56.7 +0.3
19.6	28.07 .22	27.2 0.9	20.70 .34	15.7 3.5	20.02 .21	44.3 1.6	20.61 .30	57.2 0.7
29.6	28.27 .17	26.4 0.7	20.98 .22	19.3 3.7	21.22 .17	42.8 1.5	20.89 .25	58.1 1.0
Aug. 8.5	28.42 .13	25.8 0.5	21.13 +.10	23.0 3.7	21.37 .13	41.4 1.3	21.11 .19	59.3 1.4
18.5	28.53 .08	25.5 −0.3	21.17 −.03	26.8 3.8	21.48 .09	40.2 1.1	21.26 .13	60.8 1.6
28.5	28.59 +.04	25.3 0.0	21.08 .15	30.5 3.7	21.55 +.04	39.3 0.9	21.36 +.06	62.5 1.8
Sept. 7.4	28.61 .00	25.4 +0.1	20.88 .26	34.1 3.5	21.57 .00	38.5 0.6	21.38 .00	64.3 1.9
17.4	28.58 −.04	25.6 0.3	20.57 .37	37.5 3.3	21.55 −.03	38.0 0.4	21.35 −.06	66.2 1.9
27.4	28.52 .08	26.0 0.4	20.15 .46	40.7 3.0	21.50 .07	37.7 −0.2	21.26 .11	68.1 1.8
Oct. 7.4	28.43 .10	26.4 0.5	19.65 .55	43.5 2.6	21.42 .09	37.6 0.0	21.13 .15	69.9 1.7
17.3	28.32 .12	27.0 0.6	19.06 .62	46.0 2.2	21.32 .11	37.7 +0.1	20.96 .19	71.5 1.5
27.3	28.19 .13	27.6 0.6	18.42 .67	48.0 1.7	21.21 .12	37.9 0.3	20.76 .21	72.8 1.2
Nov. 6.3	28.06 .13	28.2 0.6	17.73 .71	49.4 1.2	21.08 .12	38.2 0.4	20.55 .22	73.9 0.9
16.3	27.93 .13	28.7 0.5	17.01 .72	50.4 +0.6	20.96 .12	38.7 0.5	20.33 .22	74.6 0.5
26.2	27.81 .11	29.3 0.5	16.29 .72	50.7 0.0	20.84 .11	39.3 0.6	20.12 .20	74.9 +0.1
Dec. 6.2	27.71 .09	29.7 0.4	15.58 .70	50.4 −0.6	20.74 .10	39.9 0.7	19.93 .18	74.7 −0.3
16.2	27.62 .07	30.1 0.4	14.90 .65	49.5 1.2	20.65 .08	40.6 0.7	19.77 .15	74.2 0.7
26.1	27.56 .05	30.4 0.3	14.27 .59	48.1 1.7	20.58 .06	41.4 0.8	19.63 .11	73.3 1.1
36.1	27.53 −.02	30.6 +0.2	13.73 −.50	46.1 −2.3	20.53 −.04	42.1 +0.7	19.54 −.08	72.0 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Aquarii.		π Aquarii.		η Aquarii.		*226 Cephei (B.)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 22 10	° ′ 8 24	h m 22 18	° ′ 0 44	h m 22 28	° ′ 0 45	h m 22 29	° ′ 75 34
	s	″	s	″	s	″	s	″
Jan. 1.2	9.56 −.05	45.5 +0.4	49.06 −.06	12.0 −0.8	51.46 −.06	66.2 +0.7	58.55 −.72	47.2 −1.5
11.1	9.52 −.02	45.9 0.4	49.01 .04	11.2 0.8	51.41 .04	66.9 0.7	57.87 .63	45.4 2.1
21.1	9.51 .00	46.2 0.3	48.98 −.01	10.5 0.7	51.38 −.02	67.6 0.6	57.28 .52	43.1 2.5
31.1	9.52 +.03	46.4 +0.2	48.99 +.01	9.8 0.6	51.37 +.01	68.2 0.5	56.83 .39	40.4 2.9
Feb. 10.0	9.57 .06	46.5 0.0	49.01 .04	9.2 0.5	51.39 .03	68.6 0.4	56.51 .24	37.4 3.1
20.0	9.64 .09	46.4 −0.2	49.07 .07	8.7 0.3	51.44 .06	69.0 +0.2	56.35 −.08	34.3 3.2
Mar. 2.0	9.74 .12	46.1 0.4	49.16 .11	8.5 −0.1	51.52 .10	69.1 0.0	56.35 +.08	31.1 3.2
12.0	9.87 .15	45.6 0.6	49.28 .14	8.5 +0.1	51.63 .13	69.0 −0.2	56.51 .25	28.0 3.0
21.9	10.04 .18	44.8 0.9	49.44 .17	8.7 0.4	51.78 .16	68.7 0.5	56.83 .40	25.1 2.7
31.9	10.24 .21	43.9 1.1	49.63 .20	9.2 0.7	51.96 .20	68.1 0.7	57.31 .54	22.6 2.3
Apr. 10.9	10.47 .24	42.7 1.3	49.85 .23	10.0 0.9	52.17 .23	67.2 1.0	57.91 .67	20.5 1.9
20.9	10.73 .27	41.3 1.5	50.10 .26	11.1 1.2	52.41 .26	66.1 1.3	58.63 .77	18.9 1.4
30.8	11.01 .29	39.7 1.7	50.37 .29	12.4 1.5	52.68 .28	64.7 1.5	59.44 .84	17.8 0.8
May 10.8	11.32 .31	38.0 1.8	50.67 .30	14.0 1.7	52.97 .30	63.1 1.7	60.31 .89	17.3 −0.2
20.8	11.63 .32	36.2 1.9	50.98 .32	15.7 1.8	53.28 .31	61.3 1.8	61.21 .91	17.5 +0.5
30.7	11.96 .32	34.3 1.9	51.30 .32	17.6 2.0	53.60 .32	59.4 2.0	62.12 .90	18.2 1.0
June 9.7	12.28 .32	32.4 1.9	51.62 .32	19.6 2.0	53.92 .32	57.4 2.0	63.01 .87	19.6 1.6
19.7	12.60 .31	30.6 1.8	51.93 .30	21.7 2.0	54.24 .31	55.4 2.0	63.85 .81	21.4 2.1
29.7	12.90 .29	28.9 1.7	52.23 .28	23.7 2.0	54.54 .29	53.4 2.0	64.62 .73	23.8 2.6
July 9.6	13.17 .26	27.3 1.5	52.50 .26	25.6 1.9	54.82 .27	51.5 1.9	65.30 .63	26.6 3.0
19.6	13.42 .23	25.8 1.3	52.74 .23	27.5 1.8	55.07 .24	49.7 1.7	65.87 .52	29.7 3.3
29.6	13.62 .19	24.6 1.1	52.95 .19	29.2 1.6	55.29 .20	48.0 1.5	66.33 .39	33.1 3.5
Aug. 8.6	13.79 .15	23.6 0.9	53.12 .15	30.7 1.4	55.47 .16	46.6 1.3	66.65 .26	36.7 3.7
18.5	13.92 .10	22.9 0.6	53.25 .11	32.0 1.2	55.61 .12	45.4 1.1	66.84 +.12	40.5 3.8
28.5	14.00 .06	22.3 0.4	53.33 .06	33.1 1.0	55.71 .07	44.4 0.9	66.90 −.02	44.3 3.8
Sept. 7.5	14.04 +.02	22.0 −0.2	53.37 +.02	33.9 0.7	55.76 +.03	43.6 0.7	66.81 .15	48.1 3.7
17.4	14.03 −.02	21.9 0.0	53.38 −.01	34.6 0.5	55.77 −.01	43.0 0.5	66.60 .28	51.8 3.6
27.4	13.99 .06	22.0 +0.2	53.35 .05	35.0 0.3	55.75 .04	42.7 −0.2	66.26 .40	55.3 3.4
Oct. 7.4	13.92 .08	22.3 0.3	53.28 .08	35.2 +0.1	55.69 .07	42.5 0.0	65.80 .51	58.5 3.1
17.4	13.83 .10	22.7 0.4	53.19 .10	35.2 −0.1	55.61 .09	42.6 +0.1	65.24 .61	61.4 2.7
27.3	13.72 .12	23.1 0.5	53.09 .11	35.1 0.2	55.51 .11	42.8 0.3	64.58 .69	63.9 2.3
Nov. 6.3	13.60 .12	23.6 0.6	52.97 .12	34.8 0.4	55.40 .11	43.1 0.4	63.85 .76	66.0 1.8
16.3	13.47 .12	24.2 0.6	52.85 .12	34.4 0.5	55.29 .12	43.6 0.5	63.07 .80	67.5 1.3
26.3	13.36 .11	24.8 0.6	52.74 .11	33.8 0.6	55.17 .11	44.1 0.6	62.25 .83	68.5 0.7
Dec. 6.2	13.25 .10	25.4 0.6	52.63 .10	33.2 0.7	55.07 .10	44.7 0.7	61.42 .83	68.8 +0.1
16.2	13.16 .08	25.9 0.5	52.53 .09	32.5 0.7	54.97 .09	45.4 0.7	60.60 .81	68.6 −0.6
26.2	13.09 .06	26.4 0.5	52.45 .07	31.7 0.8	54.89 .07	46.1 0.7	59.81 .76	67.7 1.2
36.1	13.04 −.03	26.9 +0.4	52.40 −.05	30.9 −0.8	54.82 −.06	46.9 +0.8	59.08 −.68	66.3 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Pegasi.		*ι Cephei.		λ Aquarii.		α Piscis Australis. (*Fomalhaut.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$22^{\mathrm{h}}\ 35^{\mathrm{m}}$	$10^{\circ}\ 10'$	$22^{\mathrm{h}}\ 45^{\mathrm{m}}$	$65^{\circ}\ 31'$	$22^{\mathrm{h}}\ 46^{\mathrm{m}}$	$8^{\circ}\ 14'$	$22^{\mathrm{h}}\ 50^{\mathrm{m}}$	$30^{\circ}\ 17'$
	s	″	s	″	s	″	s	″
Jan. 1.2	9.20 −.06	23.5 −1.0	8.95 −.40	86.0 −1.5	1.08 −.07	67.4 +0.5	39.85 −.09	37.6 −0.3
11.1	9.13 .05	22.4 1.1	8.57 .35	84.2 2.0	1.01 .05	67.8 0.4	39.77 .07	37.2 0.6
21.1	9.09 .03	21.3 1.1	8.25 .29	82.0 2.4	0.97 .03	68.1 0.2	39.72 .04	36.4 0.9
31.1	9.07 −.01	20.1 1.1	7.99 .22	79.5 2.7	0.95 −.01	68.2 +0.1	39.69 −.01	35.4 1.1
Feb. 10.1	9.07 +.02	19.1 1.0	7.81 .14	76.6 2.9	0.96 +.02	68.3 −0.1	39.69 +.02	34.2 1.4
20.0	9.11 .05	18.1 0.9	7.72 −.05	73.6 3.0	0.99 .05	68.1 0.3	39.72 .05	32.7 1.6
Mar. 2.0	9.18 .09	17.3 0.7	7.72 +.05	70.6 3.0	1.06 .08	67.8 0.5	39.79 .09	31.0 1.8
12.0	9.28 .12	16.7 0.4	8.81 .14	67.6 2.9	1.16 .11	67.2 0.7	39.89 .12	29.2 2.0
22.0	9.42 .16	16.4 −0.2	8.00 .24	64.8 2.6	1.29 .15	66.4 0.9	40.04 .16	27.1 2.1
31.9	9.60 .19	16.5 +0.2	8.28 .33	62.4 2.2	1.45 .18	65.4 1.1	40.22 .20	24.9 2.2
Apr. 10.9	9.80 .22	16.8 0.5	8.65 .41	60.4 1.8	1.65 .22	64.1 1.4	40.43 .24	22.7 2.3
20.9	10.04 .25	17.5 0.9	9.09 .48	58.9 1.3	1.89 .25	62.7 1.6	40.69 .27	20.4 2.3
30.8	10.31 .28	18.5 1.2	9.60 .53	57.9 0.7	2.15 .28	61.0 1.7	40.97 .30	18.1 2.3
May 10.8	10.60 .30	19.8 1.5	10.15 .57	57.5 −0.1	2.44 .30	59.2 1.9	41.29 .33	15.8 2.2
20.8	10.91 .32	21.4 1.7	10.73 .59	57.7 +0.5	2.75 .31	57.3 2.0	41.63 .35	13.6 2.1
30.8	11.23 .32	23.2 1.9	11.32 .59	58.5 1.1	3.06 .32	55.3 2.0	41.98 .36	11.6 1.9
June 9.7	11.55 .32	25.3 2.1	11.91 .58	59.8 1.6	3.39 .33	53.3 2.0	42.34 .36	9.8 1.7
19.7	11.87 .31	27.4 2.2	12.48 .55	61.7 2.1	3.71 .32	51.4 1.9	42.71 .36	8.2 1.4
29.7	12.17 .29	29.7 2.2	13.01 .51	64.0 2.5	4.03 .30	49.5 1.8	43.06 .34	6.9 1.1
July 9.7	12.45 .27	31.9 2.2	13.50 .46	66.8 2.9	4.32 .28	47.8 1.6	43.39 .32	6.0 0.8
19.6	12.70 .24	34.2 2.1	13.92 .39	69.9 3.2	4.59 .25	46.3 1.4	43.70 .29	5.3 0.5
29.6	12.93 .20	36.3 2.1	14.27 .31	73.2 3.5	4.83 .22	44.9 1.2	43.97 .25	5.0 −0.2
Aug. 8.6	13.11 .16	38.3 1.9	14.54 .23	76.8 3.6	5.02 .18	43.8 1.0	44.20 .21	5.1 +0.2
18.5	13.25 .12	40.2 1.8	14.73 .15	80.5 3.7	5.18 .14	43.0 0.7	44.38 .16	5.5 0.5
28.5	13.34 .08	41.8 1.5	14.84 +.06	84.2 3.7	5.29 .09	42.4 0.5	44.52 .11	6.1 0.8
Sept. 7.5	13.40 +.04	43.2 1.3	14.86 −.02	87.9 3.6	5.36 .05	42.0 −0.3	44.60 .06	7.1 1.0
17.5	13.41 .00	44.4 1.1	14.80 .10	91.5 3.5	5.39 +.01	41.9 0.0	44.64 +.02	8.2 1.2
27.4	13.39 −.04	45.4 0.8	14.66 .18	94.9 3.3	5.39 −.02	42.0 +0.2	44.63 −.03	9.5 1.3
Oct. 7.4	13.34 .07	46.1 0.6	14.45 .25	98.0 3.0	5.35 .05	42.2 0.3	44.59 .07	10.8 1.4
17.4	13.26 .09	46.6 0.4	14.17 .30	100.8 2.6	5.28 .08	42.6 0.4	44.50 .10	12.2 1.4
27.4	13.16 .11	46.8 +0.1	13.84 .35	103.2 2.2	5.19 .10	43.1 0.5	44.40 .12	13.5 1.3
Nov. 6.3	13.05 .11	46.9 −0.1	13.47 .39	105.2 1.7	5.09 .11	43.7 0.6	44.27 .13	14.7 1.1
16.3	12.93 .12	46.7 0.3	13.06 .43	106.7 1.2	4.98 .11	44.3 0.6	44.13 .14	15.8 0.9
26.3	12.81 .12	46.3 0.5	12.62 .44	107.7 0.7	4.87 .11	45.0 0.6	43.99 .14	16.6 0.7
Dec. 6.2	12.70 .11	45.7 0.7	12.17 .45	108.0 +0.1	4.76 .11	45.6 0.6	43.86 .13	17.1 0.4
16.2	12.60 .10	44.9 0.8	11.73 .44	107.8 −0.5	4.66 .10	46.2 0.6	43.73 .12	17.4 +0.1
26.2	12.50 .08	44.0 1.0	11.30 .41	106.9 1.1	4.57 .08	46.7 0.5	43.62 .10	17.4 −0.1
36.2	12.43 −.07	43.0 −1.0	10.91 −.38	105.6 −1.6	4.50 −.06	47.1 +0.4	43.52 −.08	17.1 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Pegasi. (*Markab.*)		*o Cephei.		θ Piscium.		ι Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 58	° ′ 14 31	h m 23 13	° ′ 67 25	h m 23 21	° ′ 5 41	h m 23 33	° ′ 4 56
	s	″	s	″	s	″	s	″
Jan. 1.2	27.77 −.09	38.3 −1.0	24.77 −.46	30.4 −1.1	33.42 −.09	10.0 −0.8	27.16 −.09	32.5 −0.8
11.2	27.69 .07	37.2 1.2	24.33 .42	29.1 1.6	33.34 .08	9.2 0.8	27.07 .08	31.8 0.8
21.1	27.62 .06	35.9 1.2	23.94 .37	27.2 2.1	33.27 .06	8.4 0.8	26.99 .07	31.0 0.8
31.1	27.58 −.03	34.7 1.2	23.60 .30	24.9 2.5	33.21 .04	7.6 0.8	26.93 .05	30.2 0.7
Feb. 10.1	27.56 .00	33.5 1.2	23.34 .22	22.3 2.8	33.18 −.02	6.8 0.7	26.89 −.03	29.5 0.6
20.1	27.57 +.03	32.3 1.1	23.17 .12	19.4 3.0	33.18 +.01	6.2 0.5	26.88 .00	29.0 0.5
Mar. 2.0	27.62 .06	31.3 0.9	23.10 −.02	16.4 3.0	33.20 .04	5.8 0.4	26.89 +.03	28.6 0.3
11.0	27.69 .09	30.1 0.7	23.13 +.08	13.4 2.9	33.26 .07	5.5 −0.1	26.93 .06	28.4 −0.1
22.0	27.81 .13	30.0 0.4	23.26 .19	10.6 2.7	33.35 .11	5.5 +0.1	27.02 .10	28.4 +0.2
Apr. 1.0	27.96 .17	29.7 −0.1	23.50 .29	8.0 2.4	33.48 .15	5.7 0.4	27.13 .14	28.7 0.4
10.9	28.15 .21	29.8 +0.3	23.84 .38	5.7 2.0	33.65 .19	6.3 0.7	27.29 .18	29.2 0.7
20.9	28.38 .24	30.3 0.6	24.26 .47	3.9 1.6	33.85 .22	7.1 1.0	27.49 .21	30.1 1.0
30.9	28.64 .27	31.0 1.0	24.77 .53	2.6 1.0	34.08 .25	8.2 1.3	27.71 .25	31.2 1.3
May 10.8	28.92 .30	32.2 1.3	25.33 .59	1.8 −0.5	34.35 .28	9.6 1.5	27.98 .28	32.6 1.5
20.8	29.23 .31	33.6 1.6	25.93 .62	1.7 +0.1	34.64 .30	11.3 1.7	28.26 .30	34.3 1.7
30.8	29.55 .32	35.4 1.9	26.56 .64	2.1 0.7	34.96 .32	13.1 1.9	28.57 .32	36.1 1.9
June 9.8	29.87 .33	37.3 2.1	27.20 .64	3.0 1.3	35.28 .32	15.1 2.1	28.89 .32	38.1 2.0
19.7	30.20 .32	39.5 2.2	27.83 .62	4.5 1.8	35.60 .32	17.2 2.1	29.22 .32	40.1 2.1
29.7	30.51 .30	41.7 2.3	28.44 .58	6.6 2.3	35.92 .31	19.3 2.2	29.54 .32	42.3 2.1
July 9.7	30.81 .28	44.1 2.4	29.00 .53	9.0 2.7	36.22 .29	21.5 2.1	29.85 .30	44.4 2.1
19.7	31.07 .26	46.4 2.3	29.50 .47	11.9 3.0	36.50 .27	23.6 2.0	30.13 .28	46.4 2.0
29.6	31.31 .22	48.7 2.3	29.93 .40	15.0 3.3	36.75 .24	25.5 1.9	30.40 .25	48.4 1.9
Aug. 8.6	31.52 .18	50.9 2.2	30.29 .32	18.5 3.5	36.97 .20	27.4 1.7	30.63 .21	50.2 1.7
18.6	31.68 .14	53.0 2.0	30.56 .23	22.1 3.7	37.16 .16	29.0 1.5	30.82 .18	51.8 1.5
28.5	31.79 .10	54.9 1.8	30.75 .14	25.8 3.7	37.30 .12	30.5 1.3	30.98 .14	53.2 1.3
Sept. 7.5	31.87 .06	56.6 1.6	30.85 +.05	29.5 3.7	37.40 .08	31.7 1.1	31.09 .10	54.4 1.1
17.5	31.91 +.02	58.1 1.4	30.86 −.03	33.2 3.6	37.47 .04	32.7 0.9	31.17 .06	55.3 0.8
27.5	31.91 −.01	59.4 1.1	30.78 .12	36.8 3.5	37.50 +.01	33.4 0.6	31.21 +.02	56.0 0.6
Oct. 7.4	31.87 .05	60.4 0.9	30.62 .19	40.1 3.3	37.49 −.02	33.9 0.4	31.21 −.01	56.5 0.4
17.4	31.81 .07	61.1 0.6	30.39 .26	43.3 2.9	37.45 .05	34.3 +0.2	31.19 .04	56.7 +0.2
27.4	31.73 .09	61.6 0.4	30.10 .33	46.0 2.6	37.39 .07	34.4 0.0	31.14 .06	56.8 0.0
Nov. 6.4	31.63 .10	61.9 +0.1	29.74 .38	48.3 2.1	37.31 .09	34.3 −0.2	31.07 .08	56.7 −0.2
16.3	31.52 .11	61.9 −0.1	29.34 .43	50.2 1.6	37.21 .10	34.1 0.3	30.98 .09	56.4 0.3
26.3	31.40 .12	61.6 0.3	28.90 .46	51.6 1.1	37.11 .10	33.7 0.5	30.89 .10	56.1 0.5
Dec. 6.3	31.29 .11	61.2 0.6	28.43 .47	52.4 +0.5	37.01 .10	33.2 0.6	30.79 .10	55.5 0.6
16.2	31.18 .11	60.5 0.8	27.95 .48	52.6 −0.1	36.91 .10	32.6 0.7	30.69 .10	54.9 0.7
26.2	31.07 .10	59.6 0.9	27.48 .47	52.2 0.7	36.81 .10	31.8 0.8	30.59 .10	54.2 0.7
36.2	30.98 −.08	58.6 −1.1	27.03 −.44	51.2 −1.3	36.71 −.08	31.1 −0.8	30.49 −.09	53.5 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		*γ Cephei.				*Groombridge 4163.				ω Piscium.			
		Right Ascension.		Declinatian *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
		h m 23 34		° ′ 76 55		h m 23 48		° ′ 73 42		h m 23 52		° ′ 6 9	
		s		″		s		″		s		″	
Jan.	1.2	7.34	−.88	58.8	−0.6	40.31	−.68	46.3	−0.5	49.53	−.10	53.5	−0.7
	11.2	6.48	.83	57.9	1.2	39.64	.66	45.6	1.1	49.44	.09	52.8	0.8
	21.1	5.69	.75	56.4	1.8	39.01	.60	44.2	1.6	49.35	.08	52.0	0.8
	31.1	4.99	.64	54.3	2.2	38.44	.52	42.3	2.1	49.27	.07	51.3	0.7
Feb.	10.1	4.42	.50	51.9	2.6	37.96	.42	40.0	2.5	49.22	.05	50.6	0.6
	20.1	4.00	.35	49.1	2.9	37.60	.31	37.3	2.8	49.18	−.02	50.0	0.5
Mar.	2.0	3.73	−.18	46.1	3.0	37.36	.17	34.4	3.0	49.18	+.01	49.5	0.3
	12.0	3.64	+.01	43.1	3.1	37.26	−.03	31.4	3.0	49.20	.04	49.3	−0.1
	22.0	3.74	.19	40.0	3.0	37.30	+.12	28.4	2.9	49.26	.08	49.3	+0.1
Apr.	1.0	4.02	.36	37.2	2.8	37.49	.26	25.6	2.7	49.36	.12	49.5	0.4
	10.9	4.47	.53	34.6	2.4	37.82	.40	23.0	2.4	49.50	.16	50.0	0.6
	20.9	5.07	.68	32.4	2.0	38.29	.53	20.7	2.1	49.68	.20	50.8	0.9
	30.9	5.82	.80	30.6	1.5	38.87	.63	18.9	1.6	49.89	.23	51.8	1.2
May	10.8	6.67	.90	29.4	1.0	39.55	.72	17.6	1.0	50.14	.26	53.1	1.4
	20.8	7.60	.97	28.7	−0.4	40.31	.79	16.8	−0.5	50.42	.29	54.7	1.7
	30.8	8.59	1.01	28.6	+0.2	41.12	.83	16.6	+0.1	50.72	.31	56.5	1.9
June	9.8	9.61	1.01	29.1	0.8	41.96	.85	17.0	0.7	51.04	.32	58.4	2.0
	19.7	10.62	.99	30.2	1.3	42.81	.84	18.0	1.2	51.36	.33	60.5	2.1
	29.7	11.59	.95	31.8	1.9	43.63	.81	19.4	1.7	51.69	.32	62.6	2.1
July	9.7	12.50	.88	33.9	2.3	44.42	.76	21.4	2.2	52.00	.31	64.7	2.1
	19.7	13.34	.79	36.4	2.8	45.15	.69	23.9	2.6	52.30	.29	66.8	2.0
	29.6	14.07	.68	39.3	3.1	45.80	.61	26.7	3.0	52.57	.26	68.8	1.9
Aug.	8.6	14.69	.56	42.6	3.4	46.36	.51	29.9	3.3	52.81	.23	70.7	1.8
	18.6	15.18	.42	46.1	3.6	46.83	.41	33.3	3.5	53.02	.19	72.4	1.6
	28.5	15.53	.28	49.8	3.8	47.18	.30	36.9	3.7	53.20	.15	73.9	1.4
Sept.	7.5	15.74	+.14	53.6	3.8	47.43	.19	40.7	3.8	53.33	.11	75.1	1.2
	17.5	15.81	.00	57.5	3.8	47.56	+.07	44.5	3.8	53.42	.08	76.2	0.9
	27.5	15.74	−.14	61.3	3.8	47.57	−.04	48.2	3.7	53.48	.04	77.0	0.7
Oct.	7.4	15.53	.28	65.0	3.6	47.47	.16	51.9	3.6	53.51	+.01	77.5	0.5
	17.4	15.18	.41	68.4	3.3	47.26	.26	55.4	3.4	53.50	−.02	77.9	0.3
	27.4	14.71	.53	71.6	3.0	46.94	.36	58.6	3.0	53.47	.05	78.0	+0.1
Nov.	6.4	14.12	.64	74.4	2.6	46.53	.45	61.4	2.7	53.41	.07	78.0	−0.1
	16.3	13.43	.73	76.8	2.1	46.04	.53	63.9	2.2	53.34	.08	77.8	0.3
	26.3	12.66	.81	78.7	1.6	45.47	.60	65.8	1.7	53.25	.09	77.5	0.4
Dec.	6.3	11.83	.86	80.0	1.0	44.85	.65	67.3	1.1	53.16	.10	77.0	0.5
	16.2	10.95	.88	80.8	+0.4	44.18	.68	68.1	+0.5	53.06	.10	76.4	0.6
	26.2	10.06	.88	80.8	−0.2	43.50	.68	68.3	−0.1	52.96	.10	75.8	0.7
	36.2	9.19	−.86	80.3	−0.8	42.82	−.67	68.0	−0.6	52.86	−.09	75.1	−0.7

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1874.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion. Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Jan. 1	18 48 41.48	42.19	−22 59 6.5	5.7	11.030	+12.83	+ 3 58.90	16 18.40	1 11.06	18 44 42.63
2	18 53 6.02	6.82	22 53 44.8	43.8	11.015	13.97	4 26.89	18.40	11.02	18 48 39.19
3	18 57 30.19	31.08	22 47 55.8	54.6	11.000	15.10	4 54.51	18.39	10.97	18 52 35.75
4	19 1 53.96	54.93	22 41 39.7	38.3	10.983	16.23	5 21.74	18.38	10.92	18 56 32.31
5	19 6 17.32	18.37	22 34 56.7	55.1	10.965	17.35	5 48.55	18.35	10.86	19 0 28.86
6	19 10 40.23	41.36	22 27 46.9	45.0	10.946	18.46	6 14.91	18.32	10.80	19 4 25.42
7	19 15 2.68	3.89	22 20 10.6	8.5	10.925	19.56	6 40.81	18.29	10.73	19 8 21.98
8	19 19 24.62	25.92	22 12 7.9	5.6	10.904	20.66	7 6.21	18.25	10.66	19 12 18.54
9	19 23 46.06	47.42	22 3 39.1	36.5	10.882	21.74	7 31.10	18.21	10.58	19 16 15.09
10	19 28 6.95	8.38	21 54 44.5	41.5	10.859	22.81	7 55.43	18.15	10.50	19 20 11.65
11	19 32 27.29	28.79	21 45 24.2	21.0	10.836	23.87	8 19.20	18.10	10.42	19 24 8.21
12	19 36 47.05	48.61	21 35 38.6	35.1	10.811	24.92	8 42.39	18.04	10.33	19 28 4.77
13	19 41 6.19	7.82	21 25 27.9	24.0	10.785	25.96	9 4.98	17.97	10.25	19 32 1.33
14	19 45 24.71	26.40	21 14 52.2	47.9	10.758	27.00	9 26.96	17.90	10.16	19 35 57.89
15	19 49 42.58	44.33	21 3 52.0	47.4	10.730	28.01	9 48.28	17.82	10.07	19 39 54.44
16	19 53 59.77	61.58	20 52 27.7	22.8	10.701	29.01	10 8.91	17.74	9.97	19 43 51.00
17	19 58 16.26	18.12	20 40 39.6	34.3	10.672	30.00	10 28.84	17.66	9.87	19 47 47.56
18	20 2 32.03	33.94	20 28 27.8	22.2	10.642	30.97	10 48.05	17.58	9.77	19 51 44.12
19	20 6 47.06	49.02	20 15 52.8	46.9	10.611	31.93	11 6.52	17.49	9.67	19 55 40.68
20	20 11 1.35	3.36	20 2 55.1	48.8	10.579	32.87	11 24.24	17.40	9.57	19 59 37 24
21	20 15 14.87	16.92	19 49 34.9	28.3	10.546	33.80	11 41.20	17.31	9.47	20 3 33.79
22	20 19 27.59	29.68	19 35 52.4	45.6	10.513	34.72	11 57.38	17.21	9.36	20 7 30.35
23	20 23 39.51	41.64	19 21 48.3	41.1	10.480	35.61	12 12.74	17.11	9.25	20 11 26.90
24	20 27 50.62	52.79	19 7 22.8	15.3	10.446	36.50	12 27.28	17.02	9.14	20 15 23.46
25	20 32 0.92	3.12	18 52 36.4	28.5	10.412	37.37	12 41.01	16.88	9.03	20 19 20.02
26	20 36 10.39	12.62	18 37 29.4	21.2	10.378	38.21	12 53.92	16.76	8.92	20 23 16.58
27	20 40 19.04	21.29	18 21 62.3	53.8	10.343	39.04	13 6.00	16.64	8.81	20 27 13.13
28	20 44 26.85	29.13	18 6 15.4	6.6	10.308	39.85	13 17.26	16.52	8.69	20 31 9.69
29	20 48 33.83	36.13	17 50 9.1	0.0	10.274	40.65	13 27.68	16.39	8.58	20 35 6.25
30	20 52 39.98	42.30	17 33 43.8	34.4	10.239	41.44	13 37.27	16.25	8.46	20 39 2.81
31	20 56 45.30	47.64	17 16 59.9	50.2	10.205	42.21	13 46.03	16.11	8.35	20 42 59.36
Feb. 1	21 0 49.79	52.15	16 59 57.8	47.9	10.170	42.96	13 53.96	15.96	8.23	20 46 55.92
2	21 4 53.47	55.84	16 42 37.9	27 8	10.136	43.69	14 1.07	15 80	8.12	20 50 52.47
3	21 8 56.32	58.71	16 24 60.6	50.2	10.102	44.41	14 7.37	15.64	8.00	20 54 49.03
4	21 12 58.37	60.76	16 6 66.2	55.5	10.068	45.11	14 12.85	15.47	7.89	20 58 45.58
5	21 16 59.61	62.00	15 48 55.2	44.3	10.035	45.80	14 17.52	15.30	7.77	21 2 42.14
6	21 21 0.05	2.44	15 30 27.9	16.8	10.002	46.47	14 21.40	15.13	7.66	21 6 38.69
7	21 24 59.71	62.10	15 11 44.7	33.4	9.969	47.12	14 24.49	14.95	7.54	21 10 35.25
8	21 28 58.60	60.99	14 52 46.0	34.5	9.937	47.76	14 26.80	14.77	7.43	21 14 31.81
9	21 32 56.71	59.10	14 33 32.3	20.7	9.905	48.37	14 28.35	14.58	7.32	21 18 28.36
10	21 36 54.05	56.44	14 13 64.0	52.2	9.873	48.97	14 29.13	14.39	7.21	21 22 24.92
11	21 40 50.64	53.02	13 54 21.4	9.5	9.842	49.56	14 29.16	14.20	7.10	21 26 21.48
12	21 44 46.48	48.85	13 34 24.9	12.9	9.811	50.13	14 28.44	14.00	6.99	21 30 18.03
13	21 48 41.57	43.93	13 14 15.0	2.8	9.780	50.68	14 26.97	13.80	6.88	21 34 14.59
14	21 52 35.92	38.27	12 53 52.2	39.8	9.749	51.22	14 24.76	13.60	6.77	21 38 11.14
15	21 56 29.55	31.88	12 33 16.7	4.3	9.719	51.73	14 21.83	13.39	6.67	21 42 7.70
16	22 0 22.46	24.77	12 12 29.2	16.8	9.689	52.22	14 18.17	13.19	6.56	21 46 4.25
17	22 4 14.65	16.94	11 51 30.0	17.5	9.660	52.70	14 13.80	12.98	6.46	21 50 0.81
18	22 8 6.13	8.40	11 30 19.6	7.1	9.631	53.16	14 8.72	12.77	6.36	21 53 57.36
19	22 11 56.92	59.17	11 8 58.3	45.8	9.603	53.60	14 2.95	12.56	6.26	21 57 53.92
20	22 15 47.04	49.27	10 47 26.7	14.2	9.575	54.02	13 56.50	12.34	6.16	22 1 50.47
21	22 19 36.48	38.69	10 25 45.1	32.6	9.547	54.43	13 49.39	12.12	6.07	22 5 47.03
22	22 23 25.27	27.45	10 3 54.0	41.5	9.520	54.81	13 41.62	11.90	5.98	22 9 43.58
23	22 27 13.41	15.56	9 41 53.9	41.5	9.493	55.18	13 33.20	11.68	5.89	22 13 40.14
24	22 31 0.93	3.04	9 19 45.1	32.8	9.467	55.53	13 24.15	11.46	5.80	22 17 36.69
25	22 34 47.83	49.91	8 57 28.1	15.8	9.442	55.87	13 14.50	11.23	5.72	22 21 33.24
26	22 38 34.15	36.20	8 34 63.2	50.9	9.418	56.19	13 4.25	11.00	5.63	22 25 29.79
27	22 42 19.89	21.91	8 12 30.9	18.7	9.394	56.49	12 53.44	10.77	5.55	22 29 26.35
28	22 46 5.08	7.06	7 49 51.5	39.4	9.372	56.78	12 42.07	10.53	5.47	22 33 22.90
29	22 49 49.75	51.69	− 7 26 65.4	53.5	9.350	+57.05	+12 30.18	16 10.29	1 5.40	22 37 19.46

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.19 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1874.	APPARENT RIGHT ASCENSION. Mean Noon.	APPARENT RIGHT ASCENSION. Apparent Noon.	APPARENT DECLINATION. Mean Noon.	APPARENT DECLINATION. Apparent Noon.	Hourly Motion, Mean Noon. Right Ascension.	Hourly Motion, Mean Noon. Declination.	Equation of Time for Apparent Noon,	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Mar. 1	22 49 49.75	51.69	− 7 26 65.4	53.5	9.350	+57.05	+12 30.18	16 10.29	1 5.40	22 37 19.46
2	22 53 33.91	35.82	7 4 13.1	1.3	9.330	57.31	12 17.80	10.05	5.33	22 41 16.01
3	22 57 17.59	19.47	6 41 14.7	3.1	9.310	57.55	12 4.93	9.80	5.26	22 45 12.57
4	23 1 0.80	2.64	6 17 70.8	59.3	9.291	57.77	11 51.57	9.55	5.19	22 49 9.12
5	23 4 43.57	45.37	5 54 61.7	50.4	9.273	57.98	11 37.77	9.28	5.13	22 53 5.68
6	23 8 25.91	27.67	5 31 47.8	36.7	9.256	58.17	11 23.57	9.02	5.07	22 57 2.23
7	23 12 7.87	9.59	5 8 29.3	18.4	9.240	58.35	11 8.98	8.76	5.01	23 0 58.78
8	23 15 49.46	51.14	4 44 66.7	56.0	9.225	58.52	10 54.02	8.50	4.95	23 4 55.33
9	23 19 30.69	32.32	4 21 40.3	29.9	9.211	58.67	10 38.69	8.23	4.90	23 8 51.89
10	23 23 11.58	13.17	3 58 10.5	0.3	9.197	58.80	10 23.03	7.96	4.85	23 12 48.44
11	23 26 52.16	53.71	3 34 37.7	27.7	9.184	58.92	10 7.06	7.69	4.80	23 16 45.00
12	23 30 32.45	33.96	3 10 62.3	52.5	9.172	59.02	9 50.80	7.42	4.76	23 20 41.55
13	23 34 12.47	13.94	2 47 24.5	15.0	9.161	59.11	9 34.25	7.15	4.72	23 24 38.11
14	23 37 52.23	53.65	2 23 44.8	35.6	9.151	59.18	9 17.46	6.88	4.68	23 28 34.66
15	23 41 31.75	33.13	1 59 63.5	54.6	9.142	59.24	9 0.43	6.61	4.64	23 32 31.21
16	23 45 11.05	12.38	1 36 21.1	12.5	9.133	59.28	8 43.18	6.34	4.61	23 36 27.76
17	23 48 50.15	51.43	1 12 38.1	29.8	9.125	59.30	8 25.73	6.06	4.58	23 40 24.32
18	23 52 29.07	30.30	0 48 54.8	46.7	9.118	59.30	8 8.09	5.79	4.56	23 44 20.87
19	23 56 7.81	9.00	0 25 11.4	3.6	9.111	59.29	7 50.28	5.52	4.54	23 48 17.43
20	23 59 46.41	47.55	− 0 1 28.6	21.1	9.105	59.27	7 32.33	5.25	4.52	23 52 13.98
21	0 3 24.86	25.96	+ 0 22 13.5	20.7	9.099	59.23	7 14.25	4.98	4.50	23 56 10.53
22	0 7 3.20	4.26	0 45 54.3	61.2	9.095	59.17	6 56.04	4.71	4.48	0 0 7.08
23	0 10 41.44	42.45	1 9 33.4	40.0	9.091	59.09	6 37.72	4.44	4.47	0 4 3.64
24	0 14 19.60	20.56	1 33 10.6	16.9	9.088	59.00	6 19.32	4.17	4.46	0 8 0.19
25	0 17 57.69	58.60	1 56 45.4	51.4	9.086	58.89	6 0.86	3.90	4.46	0 11 56.75
26	0 21 35.73	36.59	2 20 17.5	23.1	9.085	58.77	5 42.36	3.63	4.45	0 15 53.30
27	0 25 13.77	14.58	2 43 46.6	51.9	9.085	58.64	5 23.85	3.36	4.45	0 19 49.85
28	0 28 51.82	52.59	3 7 12.3	17.3	9.086	58.49	5 5.36	3.09	4.46	0 23 46.40
29	0 32 29.89	30.62	3 30 34.2	39.0	9.087	58.33	4 46.87	2.81	4.47	0 27 42.96
30	0 36 8.00	8.68	3 53 52.0	56.5	9.089	58.15	4 28.43	2.54	4.48	0 31 39.51
31	0 39 46.17	46.81	4 17 5.5	9.6	9.092	57.96	4 10.05	2.26	4.49	0 35 36.07
Apr. 1	0 43 24.44	25.03	4 40 14.2	18.0	9.097	57.76	3 51.77	1.99	4.50	0 39 32.62
2	0 47 2.82	3.37	5 3 17.8	21.3	9.102	57.54	3 33.60	1.71	4.52	0 43 29.18
3	0 50 41.34	41.84	5 26 16.1	19.3	9.108	57.31	3 15.57	1.43	4.54	0 47 25.73
4	0 54 20.02	20.48	5 49 8.9	11.8	9.115	57.07	2 57.70	1.15	4.57	0 51 22.28
5	0 57 58.88	59.29	6 11 55.6	58.2	9.123	56.81	2 40.00	0.87	4.60	0 55 18.83
6	1 1 37.94	38.30	6 34 36.0	38.3	9.132	56.54	2 22.51	0.59	4.63	0 59 15.39
7	1 5 17.22	17.54	6 57 9.7	11.7	9.142	56.26	2 5.24	0.31	4.66	1 3 11.94
8	1 8 56.74	57.02	7 19 36.6	38.3	9.152	55.96	1 48.22	16 0.03	4.69	1 7 8.50
9	1 12 36.53	36.76	7 41 56.1	57.6	9.163	55.65	1 31.46	15 59.75	4.73	1 11 5.05
10	1 16 16.59	16.78	8 4 8.0	9.2	9.175	55.33	1 14.97	59.47	4.77	1 15 1.61
11	1 19 56.94	57.09	8 26 11.9	12.9	9.188	54.99	0 58.76	59.19	4.81	1 18 58.16
12	1 23 37.60	37.71	8 48 7.5	8.2	9.201	54.64	0 42.87	58.92	4.85	1 22 54.72
13	1 27 18.59	18.66	9 9 54.5	55.0	9.215	54.27	0 27.31	58.64	4.90	1 26 51.27
14	1 30 59.91	59.94	9 31 32.4	32.7	9.229	53.88	+ 0 12.09	58.37	4.95	1 30 47.82
15	1 34 41.58	41.57	9 53 0.9	1.0	9.244	53.48	− 0 2.79	58.10	5.00	1 34 44.37
16	1 38 23.61	23.57	10 14 19.6	19.4	9.259	53.07	0 17.32	57.83	5.05	1 38 40.93
17	1 42 6.01	5.93	10 35 28.2	27.8	9.275	52.64	0 31.47	57.57	5.11	1 42 37.48
18	1 45 48.80	48.68	10 56 26.3	25.7	9.291	52.20	0 45.23	57.31	5.17	1 46 34.04
19	1 49 31.98	31.82	11 17 13.6	12.8	9.307	51.74	0 58.59	57.06	5.23	1 50 30.59
20	1 53 15.57	15.38	11 37 49.7	48.7	9.324	51.26	1 11.56	56.81	5.29	1 54 27.15
21	1 56 59.57	59.35	11 58 14.1	12.9	9.342	50.77	1 24.12	56.56	5.35	1 58 23.70
22	2 0 43.99	43.73	12 18 26.7	25.3	9.360	50.27	1 36.25	56.31	5.42	2 2 20.26
23	2 4 28.85	28.56	12 38 27.2	25.7	9.379	49.75	1 47.95	56.06	5.49	2 6 16.81
24	2 8 14.16	13.84	12 58 15.1	13.5	9.398	49.22	1 59.20	55.82	5.56	2 10 13.37
25	2 11 59.93	59.58	13 17 50.0	48.3	9.417	48.68	2 9.98	55.57	5.63	2 14 9.92
26	2 15 46.17	45.79	13 37 11.8	9.9	9.437	48.13	2 20.29	55.33	5.70	2 18 6.48
27	2 19 32.90	32.49	13 56 20.1	16.1	9.457	47.56	2 30.11	55.09	5.77	2 22 3.03
28	2 23 20.12	19.69	14 15 14.5	12.4	9.478	46.98	2 39.44	54.85	5.85	2 25 59.59
29	2 27 7.85	7.40	14 33 54.9	52.6	9.499	46.38	2 48.27	54.61	5.92	2 29 56.14
30	2 30 56.09	55.62	14 52 20.8	18.5	9.521	45.78	2 56.59	54.37	6.00	2 33 52.70
31	2 34 44.86	44.38	+15 10 32.1	29.8	9.543	+45.16	− 3 4.39	15 54.13	1 6.08	2 37 49.26

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon,	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
1874.	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
May 1	2 34 44.66	44.38	+15 10 32.1	29.8	9.543	+45.16	− 3 4.39	15 54.13	1 6.08	2 37 49.26
2	2 38 34.18	33.68	15 28 28.4	26.0	9.566	44.53	3 11.63	53.90	6.16	2 41 45.82
3	2 42 24.05	23.53	15 46 9.4	6.9	9.589	43.88	3 18.31	53.66	6.24	2 45 42.37
4	2 46 14.48	13.94	16 3 34.8	32.3	9.613	43.23	3 24.43	53.43	6.32	2 49 38.93
5	2 50 5.48	4.92	16 20 44.3	41.8	9.637	42.56	3 29.98	53.20	6.40	2 53 35.48
6	2 53 57.06	56.48	16 37 37.8	35.3	9.661	41.88	3 34.96	52.97	6.48	2 57 32.04
7	2 57 49.22	48.63	16 54 14.8	12.3	9.685	41.19	3 39.36	52.74	6.56	3 1 28.59
8	3 1 41.96	41.36	17 10 35.1	32.6	9.710	40.49	3 43.17	52.52	6 65	3 5 25.15
9	3 5 35.30	34.69	17 26 38.3	35.8	9.735	39.77	3 46.40	52.30	6.73	3 9 21.71
10	3 9 29.24	28.62	17 42 24.2	21.7	9.760	39.04	3 49.02	52.08	6.80	3 13 18.27
11	3 13 23.77	23.14	17 57 52.3	49.8	9.785	38.30	3 51.05	51.87	6.89	3 17 14.82
12	3 17 18.88	18.25	18 13 2.5	0.0	9.809	37.54	3 52.50	51.66	6.98	3 21 11.38
13	3 21 14.58	13.95	18 27 54.5	52.1	9.833	36.77	3 53.36	51.45	7.06	3 25 7.93
14	3 25 10.87	10.23	18 42 27.9	25.6	9.857	35.99	3 53.63	51.25	7.14	3 29 4.49
15	3 29 7.74	7:10	18 56 42.3	40.1	9.881	35.20	3 53.33	51.05	7.22	3 33 1.05
16	3 33 5.18	4.54	19 10 37.7	35.5	9.904	34.40	3 52.45	50.86	7.30	3 36 57.61
17	3 37 3.18	2.54	19 24 13.6	11.5	9.927	33.58	3 51.00	50.67	7.38	3 40 54.16
18	3 41 1.73	1.09	19 37 29.6	27.6	9.950	32.75	3 49.00	50.49	7.46	3 44 50.72
19	3 45 0.83	0.19	19 50 25.6	23.6	9.973	31.91	3 46.45	50.31	7.54	3 48 47.28
20	3 48 60.47	59.84	20 2 61.2	59.2	9.996	31.06	3 43.37	50.13	7.62	3 52 43.84
21	3 53 0.64	0.02	20 15 16.3	14.4	10.018	30.19	3 39.76	49.96	7.70	3 56 40.39
22	3 57 1.33	0.72	20 27 10.5	8.7	10.039	29.32	3 35.63	49.79	7.77	4 0 36.95
23	4 1 2.52	1.93	20 38 43.7	42.0	10.060	28.43	3 31.00	49.63	7.84	4 4 33.51
24	4 5 4.20	3.63	20 49 55.6	54.0	10.081	27.54	3 25.88	49.47	7.91	4 8 30.07
25	4 9 6.38	5.82	21 0 46.0	44.5	10.101	26.64	3 20.26	49.31	7.98	4 12 26.62
26	4 13 9.04	8.49	21 11 14.6	13.2	10.120	25.73	3 14.16	49.16	8.05	4 16 23.18
27	4 17 12.16	11.63	21 21 21.2	19.9	10 139	24.81	3 7.60	49.01	8.12	4 20 19.74
28	4 21 15.73	15.22	21 31 5.8	4.6	10.158	23.89	3 0.59	48.86	8.19	4 24 16.30
29	4 25 19.75	19.26	21 40 28.0	26.9	10.177	22.96	2 53.12	48.71	8.25	4 28 12.85
30	4 29 24.22	23.75	21 49 27.8	26.8	10.195	22.02	2 45.21	48.57	8.31	4 32 9.41
31	4 33 29.13	28.68	21 58 4.9	4.0	10.213	21.07	2 36.86	48.43	8.37	4 36 5.97
June 1	4 37 34.45	34.02	22 6 19.1	18.3	10.230	20.11	2 28.09	48.29	8.43	4 40 2.53
2	4 41 40.17	39.77	22 14 10.3	9.6	10.247	19.15	2 18.92	48.15	8.48	4 43 59.08
3	4 45 46.28	45.91	22 21 38.3	37.7	10.263	18.18	2 9.37	48.02	8.53	4 47 55.64
4	4 49 52.77	52.42	22 28 42.9	42.4	10.278	17.20	1 59.46	47.89	8.58	4 51 52.20
5	4 53 59.62	59.30	22 35 24.1	23.6	10.293	16.22	1 49.17	47.77	8.63	4 55 48.76
6	4 58 6.82	6.53	22 41 41.7	41.3	10.307	15.23	1 38.51	47.65	8.67	4 59 45.32
7	5 2 14.35	14.10	22 47 35.3	35.0	10.320	14.24	1 27.55	47.53	8.71	5 3 41.88
8	5 6 22.18	21.97	22 53 5.1	4.8	10.332	13.24	1 16.28	47.42	8.75	5 7 38.44
9	5 10 30.30	30.12	22 58 10.8	10.6	10.344	12.23	1 4.72	47.31	8.79	5 11 35.00
10	5 14 38.68	38.53	23 2 52.4	52.2	10.355	11.22	0 52.89	47.21	8.83	5 15 31.56
11	5 18 47.30	47.18	23 7 9.6	9.5	10.364	10.21	0 40.82	47.11	8.86	5 19 28.11
12	5 22 56.14	56.06	23 11 2.4	2.4	10.373	9.19	0 28.54	47.01	8.88	5 23 24.67
13	5 27 5.17	5.13	23 14 30.7	30.7	10.380	8.17	0 16.07	46.92	8.90	5 27 21.23
14	5 31 14.37	14.36	23 17 34.4	34.4	10.386	7.14	− 0 3.43	46.84	8.92	5 31 17.79
15	5 35 23.69	23.72	23 20 13.5	13.5	10.391	6.11	+ 0 9.34	46.77	8.94	5 35 14.35
16	5 39 33.12	33.19	23 22 27.9	27.9	10.395	5.08	0 22.22	46.70	8.96	5 39 10.90
17	5 43 42.63	42.73	23 24 17.4	17.4	10.397	4.05	0 35.18	46.63	8.97	5 43 7.46
18	5 47 52.20	52.33	23 25 42.1	42.1	10.398	3.02	0 48.19	46.57	8.98	5 47 4.02
19	5 52 1.79	1.96	23 26 42.0	42.0	10.399	1.98	1 1.22	46.52	8.98	5 51 0.58
20	5 56 11.39	11.60	23 27 17.1	17.1	10.399	+ 0.95	1 14.25	46.47	8.98	5 54 57.14
21	6 0 20.97	21.22	23 27 27.3	27.3	10 398	− 0.09	1 27.28	46.42	8.98	5 58 53.70
22	6 4 30.51	30.80	23 27 12.7	12.7	10.395	1.13	1 40.27	46.38	8.98	6 2 50.26
23	6 8 39.97	40.30	23 26 33.3	33.2	10.392	2.16	1 53.17	46.34	8.97	6 6 46.82
24	6 12 49.33	49.70	23 25 29.1	28.9	10.387	3.19	2 5.96	46.31	8.96	6 10 43.38
25	6 16 58.57	58.98	23 24 0.2	0.0	10.382	4.22	2 18.65	46.28	8.94	6 14 39.93
26	6 21 7.68	8.12	23 22 6.7	6.5	10.376	5.25	2 31.21	46.26	8.92	6 18 36.49
27	6 25 16.63	17.10	23 19 48.6	48.3	10.369	6.27	2 43.60	46.24	8.90	6 22 33.05
28	6 29 25.40	25.91	23 17 5.9	5.6	10.361	7.29	2 55.81	46.22	8.87	6 26 29.61
29	6 33 33.99	34.54	23 13 58.8	58.4	10.353	8.30	3 7.83	46.20	8.84	6 30 26.17
30	6 37 42.36	42.95	23 10 27.3	26.7	10.344	9.31	3 19.65	46.19	8.81	6 34 22.73
31	6 41 50.51	51.12	+23 6 31.5	30.9	10.334	−10.32	+ 3 31.25	15 46.18	1 8.78	6 38 19.29

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1874.	APPARENT RIGHT ASCENSION. Mean Noon.	APPARENT RIGHT ASCENSION. Apparent Noon.	APPARENT DECLINATION. Mean Noon.	APPARENT DECLINATION. Apparent Noon.	Hourly Motion. Mean Noon. Right Ascension.	Hourly Motion. Mean Noon. Declination.	Equation of Time for Apparent Noon.	Semidiameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
July 1	6 41 50.51	51.12	+23 6 31.5	30.9	10.334	-10.32	+ 3 31.25	15 46.18	1 8.78	6 38 19.29
2	6 45 58.40	59.04	23 2 11.5	10.8	10.323	11.33	3 42.59	46.17	8.74	6 42 15.84
3	6 50 6.03	6.70	22 57 27.4	26.6	10.312	12.33	3 53.65	46.17	8.70	6 46 12.40
4	6 54 13.38	14.08	22 52 19.4	18.5	10.300	13.33	4 4.44	46.17	8.66	6 50 8.96
5	6 58 20.42	21.15	22 46 47.4	46.4	10.287	14.33	4 14.93	46.17	8.61	6 54 5.52
6	7 2 27.15	27.91	22 40 51.6	50 4	10.273	15.32	4 25.10	46.18	8.56	6 58 2.08
7	7 6 33.54	34.33	22 34 32.2	30.9	10.259	16.30	4 34.93	46.19	8.51	7 1 58.64
8	7 10 39.58	40.39	22 27 49.4	48.0	10.243	17.27	4 44.40	46.21	8.46	7 5 55.20
9	7 14 45.23	46.06	22 20 43.2	41.7	10.227	18.24	4 53.49	46.24	8.40	7 9 51.76
10	7 18 50.49	51.34	22 13 13.8	12.2	10.210	19.20	5 2.20	46.27	8.34	7 13 48.31
11	7 22 55.33	56.21	22 5 21.4	19.7	10.192	20.16	5 10.49	46.30	8.28	7 17 44.87
12	7 26 59.74	60.64	21 57 6.2	4.3	10.174	21.11	5 18.34	46.34	8.22	7 21 41.43
13	7 31 3.69	4.60	21 48 28.4	26.4	10.155	22.05	5 25.73	46.39	8.15	7 25 37.99
14	7 35 7.16	8.09	21 39 28.1	26.0	10.135	22.98	5 32.65	46.44	8.08	7 29 34.54
15	7 39 10.15	11.10	21 30 5.6	3.4	10.114	23.90	5 39.07	46.49	8.01	7 33 31.10
16	7 43 12.63	13.59	21 20 21.1	18.7	10.093	24.81	5 44.99	46.55	7.94	7 37 27.66
17	7 47 14.58	15.55	21 10 14.8	12.3	10.071	25.71	5 50.39	46.62	7.87	7 41 24.22
18	7 51 15.99	16.98	20 59 47.0	44.4	10.048	26.60	5 55.25	46.69	7.79	7 45 20.78
19	7 55 16.85	17.85	20 48 58.0	55.3	10.024	27.48	5 59.54	46.77	7.71	7 49 17.34
20	7 59 17.15	18.16	20 37 47.8	45.1	10.000	28.35	6 3.27	46.85	7.63	7 53 13.89
21	8 3 16.87	17.89	20 26 17.0	14.1	9.976	29.21	6 6.42	46.94	7.55	7 57 10.45
22	8 7 16.00	17.03	20 14 25.6	22.6	9.952	30.06	6 8.99	47.03	7.47	8 1 7.01
23	8 11 14.54	15.57	20 2 13.9	10.8	9.927	30.90	6 10.97	47.13	7.39	8 5 3.57
24	8 15 12.48	13.51	19 49 42.1	38.8	9.902	31.73	6 12.37	47.24	7.31	8 9 0.12
25	8 19 9.82	10.85	19 36 50.7	47.3	9.877	32.55	6 13.15	47.33	7.23	8 12 56.68
26	8 23 6.57	7.60	19 23 39.8	36.4	9.852	33.35	6 13.33	47.43	7.15	8 16 53.24
27	8 27 2.71	3.74	19 10 9.6	6.1	9.827	34.15	6 12.90	47.54	7.06	8 20 49.80
28	8 30 58.25	59.27	18 56 20.5	16.9	9.802	34.94	6 11.89	47.65	6.98	8 24 46.35
29	8 34 53.19	54.20	18 42 12.7	9.0	9.777	35.71	6 10.27	47.76	6.87	8 28 42.91
30	8 38 47.54	48.54	18 27 46.5	42.7	9.752	36.47	6 8.06	47.89	6.80	8 32 39.46
31	8 42 41.28	42.27	18 12 62.0	58.2	9.727	37.22	6 5.25	48.01	6.71	8 36 36.02
Aug. 1	8 46 34.43	35.41	17 57 59.7	55.9	9.702	37.96	6 1.83	48.13	6.63	8 40 32.58
2	8 50 27.00	27.97	17 42 39.7	35.9	9.678	38.69	5 57.82	48.26	6.54	8 44 29.14
3	8 54 18.98	19.94	17 26 62.3	58.4	9.653	39.41	5 53.25	48.39	6.45	8 48 25.69
4	8 58 10.37	11.31	17 11 7.9	4.0	9.629	40.12	5 48.10	48.52	6.36	8 52 22.25
5	9 2 1.19	2.11	16 54 56.6	52.7	9.605	40.81	5 42.37	48.65	6.27	8 56 18.80
6	9 5 51.43	52.34	16 38 28.9	25.0	9.581	41.49	5 36.05	48.79	6.19	9 0 15.36
7	9 9 41.09	41.98	16 21 44.9	41.0	9.457	42.15	5 29.14	48.93	6.10	9 4 11.92
8	9 13 30.16	31.02	16 4 45.0	41.2	9.534	42.81	5 21.67	49.08	6.02	9 8 8.48
9	9 17 18.69	19.53	15 47 29.5	25.7	9.510	43.45	5 13.64	49.23	5.93	9 12 5.03
10	9 21 6.64	7.47	15 29 58.6	54.8	9.487	44.09	5 5.03	49.39	5.85	9 16 1.59
11	9 24 54.04	54.83	15 12 12.9	9.1	9.463	44.71	4 55.85	49.56	5.77	9 19 58.14
12	9 28 40.87	41.63	14 54 12.3	8.7	9.440	45.32	4 46.13	49.73	5.69	9 23 54.70
13	9 32 27.14	27.87	14 35 57.5	54.0	9.417	45.91	4 35.85	49.90	5.61	9 27 51.25
14	9 36 12.87	13.57	14 17 28.6	25.2	9.394	46.48	4 25.03	50.08	5.53	9 31 47.81
15	9 39 58.05	58.72	13 58 46.2	42.8	9.371	47.04	4 13.66	50.26	5.45	9 35 44.36
16	9 43 42.69	43.32	13 39 50.4	47.1	9.349	47.59	4 1.74	50.45	5.37	9 39 40.92
17	9 47 26.80	27.40	13 20 41.6	38.4	9.327	48.13	3 49.30	50.64	5.29	9 43 37.47
18	9 51 10.39	10.95	13 1 20.0	17.0	9.306	48.65	3 36.33	50.83	5.22	9 47 34.03
19	9 54 53.47	53.99	12 41 46.2	43.4	9.285	49.16	3 22.86	51.03	5.15	9 51 30.58
20	9 58 36.05	36.54	12 21 60.4	57.8	9.264	49.65	3 8.88	51.23	5.08	9 55 27.14
21	10 2 18.14	18.59	12 2 3.0	0.5	9.244	50.12	2 54.42	51.43	5.01	9 59 23.69
22	10 5 59.75	60.16	11 41 54.2	51.9	9.224	50.59	2 39.48	51.64	4.94	10 3 20.25
23	10 9 40.90	41.27	11 21 34.5	32.4	9.205	51.05	2 24.08	51.85	4.88	10 7 16.80
24	10 13 21.61	21.94	11 1 3.9	2.0	9.187	51.49	2 8.23	52.06	4.82	10 11 13.36
25	10 17 1.90	2.19	10 40 22.9	21.2	9.170	51.92	1 51.97	52.28	4.76	10 15 9.91
26	10 20 41.78	42.03	10 19 31.9	30.4	9.153	52.33	1 35.29	52.50	4.71	10 19 6.47
27	10 24 21.26	21.47	9 58 31.1	29.8	9.137	52.73	1 18.22	52.72	4.65	10 23 3.02
28	10 28 0.37	0.53	9 37 20.7	19.7	9.122	53.12	1 0.78	52.94	4.60	10 26 59.58
29	10 31 39.13	39.24	9 16 1.1	0.4	9.108	53.49	0 42.99	53.16	4.55	10 30 56.13
30	10 35 17.56	17.63	8 54 32.6	32.1	9.094	53.86	0 24.85	53.38	4.50	10 34 52.69
31	10 38 55.68	55.70	+ 8 32 55.6	55.3	9.081	-54.22	+ 0 6.42	15 53.60	1 4.45	10 38 49.24

Note.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1874.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon,	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Sept. 1	10 42 33.50	33.48	+ 8 11 10.1	10.1	9.069	-54.56	— 0 12.30	15 53.83	1 4.42	10 42 45.80
2	10 46 11.05	10.98	7 49 16.7	17.0	9.058	54.89	0 31.32	54.05	4.36	10 46 42.35
3	10 49 48.34	48.22	7 27 15.4	16.1	9.048	55.20	0 50.56	54.28	4.32	10 50 38.91
4	10 53 25.39	25.22	7 5 6.9	7.8	9.039	55.50	1 10.04	54.51	4.28	10 54 35.46
5	10 57 2.22	2.00	6 42 51.1	52.4	9.030	55.79	1 29.76	54.75	4.25	10 58 32.01
6	11 0 38.84	38.57	6 20 28.7	30.3	9.022	56.07	1 49.70	54.99	4.22	11 2 28.56
7	11 4 15.27	14.95	5 57 59.8	61.8	9.014	56.33	2 9.83	55.23	4.19	11 6 25.12
8	11 7 51.53	51.16	5 35 24.9	27.3	9.007	56 58	2 30.12	55.47	4.17	11 10 21.67
9	11 11 27.62	27.20	5 12 44.2	46.9	9.001	56.81	2 50.57	55.72	4.15	11 14 18.23
10	11 15 3.58	3.11	4 49 58.1	61.1	8.995	57.02	3 11.16	55.97	4.13	11 18 14.78
11	11 18 39.40	38.88	4 27 7.0	10.4	8.990	57.22	3 31.88	56.23	4.11	11 22 11.34
12	11 22 15.12	14.55	4 4 11.3	15.0	8.986	57.41	3 52.71	56.49	4.09	11 26 7.89
13	11 25 50.74	50.12	3 41 11.2	15.2	8.982	57.58	4 13.65	56.75	4.08	11 30 4.44
14	11 29 26.28	25.60	3 18 7.2	11.6	8.979	57.74	4 34.65	57.01	4.07	11 34 0.99
15	11 33 1.76	1.03	2 54 59.6	64.4	8.977	57.88	4 55.71	57.28	4.06	11 37 57.55
16	11 36 37.19	36.40	2 31 48.9	54.0	8.976	58.01	5 16.83	57.54	4.06	11 41 54.10
17	11 40 12.60	11.76	2 8 35.1	40.6	8.975	58.12	5 37.98	57.81	4.06	11 45 50.66
18	11 43 48.00	47.11	1 45 18.9	24.8	8.975	58.22	5 59.12	58.08	4.06	11 49 47.21
19	11 47 23.42	22.48	1 22 0.5	6.7	8.976	58.30	6 20.25	58.35	4.06	11 53 43.77
20	11 50 58.87	57.87	0 58 40.3	46.8	8.978	58.37	6 41.34	58.62	4.07	11 57 40.32
21	11 54 34.38	33.33	0 35 18.5	25.4	8.981	58.43	7 2.39	58.90	4.08	12 1 36.87
22	11 58 9.97	8.87	+ 0 11 55.5	62.7	8.985	58.47	7 23.36	59.17	4.09	12 5 33.42
23	12 1 45.65	44.50	— 0 11 28.3	20.7	8.990	58.50	7 44.23	59.44	4.11	12 9 29.98
24	12 5 21.45	20.25	0 34 52.6	44.7	8.996	58.52	8 4.97	59.71	4.14	12 13 26.53
25	12 8 57.41	56.15	0 58 17.2	8.9	9.002	58.52	8 25.56	15 59.99	4.17	12 17 23.09
26	12 12 33.54	32.22	1 21 41.7	33.1	9.010	58.51	8 45.99	16 0.26	4.20	12 21 19.64
27	12 16 9.86	8.49	1 44 65.8	56.9	9.018	58.49	9 6.22	0.53	4.23	12 25 16.20
28	12 19 46.41	44.99	2 8 29.1	19.9	9.028	58.45	9 26.23	0.80	4.26	12 29 12.75
29	12 23 23.20	21.73	2 31 51.5	41.9	9.038	58.40	9 45.98	1.08	4.30	12 33 9.30
30	12 26 60.26	58.74	2 55 12.4	2.6	9.050	58.34	10 5.46	1.35	4.34	12 37 5.85
Oct. 1	12 30 37.61	36.04	3 18 31.8	21.7	9.062	58.26	10 24.67	1.62	4.38	12 41 2.41
2	12 34 15.26	13.64	3 41 49.0	38.7	9.076	58.17	10 43.55	1.89	4.42	12 44 58.96
3	12 37 53.26	51.59	4 4 63.9	53.4	9.090	58.06	11 2.11	2.17	4.47	12 48 55.52
4	12 41 31.61	29.59	4 28 16.1	5.3	9.105	57.94	11 20.32	2.44	4.52	12 52 52.07
5	12 45 10.32	8.56	4 51 25.1	14.0	9.121	57.80	11 38.16	2.71	4.57	12 56 48.62
6	12 48 49.43	47.62	5 14 30.6	19.2	9.138	57.65	11 55.61	2.98	4.63	13 0 45.17
7	12 52 28.94	27.08	5 37 32.3	20.7	9.155	57.48	12 12.65	3.26	4.69	13 4 41.73
8	12 56 8.88	6.97	6 0 29.7	17.9	9.173	57.29	12 29.27	3.53	4.75	13 8 38.28
9	12 59 49.26	47.30	6 23 22.5	10.4	9.192	57.09	12 45.44	3.81	4.82	13 12 34.84
10	13 3 30.10	28.10	6 45 70.2	57.9	9.212	56.87	13 1.15	4.08	4.89	13 16 31.39
11	13 7 11.42	9.38	7 8 52.5	40.0	9.232	56.64	13 16.39	4.36	4.96	13 20 27.95
12	13 10 53.23	51.15	7 31 28.9	16.2	9.253	56.39	13 31.13	4.63	5.04	13 24 24.50
13	13 14 35.55	33.43	7 53 59.0	46.1	9.274	56.12	13 45.37	4.91	5.12	13 28 21.06
14	13 18 18.39	16.22	8 16 22.4	9.4	9.296	55.83	13 59.10	5.19	5.20	13 32 17.61
15	13 21 61.75	59.54	8 38 38.8	25.7	9.319	55.53	14 12.29	5.47	5.28	13 36 14.17
16	13 25 45.66	43.42	9 0 47.7	34.5	9.342	55.21	14 24.92	5.74	5.36	13 40 10.72
17	13 29 30.15	27.87	9 22 48.8	35.5	9.366	54.87	14 36.98	6.02	5.45	13 44 7.27
18	13 33 15.22	12.90	9 44 41.6	28.2	9.391	54.52	14 48.48	6.30	5.54	13 48 3.82
19	13 36 60.89	58.53	10 6 25.8	12.3	9.416	54.15	14 59.38	6.58	5.63	13 52 0.38
20	13 40 47.17	44.78	10 27 60.9	47.3	9.442	53.77	15 9.65	6.86	5.72	13 55 56.93
21	13 44 34.10	31.68	10 49 26.6	12.9	9.469	53.37	15 19.28	7.13	5.82	13 59 53.49
22	13 48 21.68	19.23	11 10 42.4	28.7	9.497	52.95	15 28.27	7.40	5.91	14 3 50.04
23	13 52 9.93	7.45	11 31 48.2	34.5	9.525	52.52	15 36.59	7.67	6.01	14 7 46.60
24	13 55 58.86	56.35	11 52 43.5	29.8	9.554	52.07	15 44.22	7.94	6.11	14 11 43.15
25	13 59 48.49	45 96	12 13 27.9	14.3	9.583	51.61	15 51.15	8.20	6.22	14 15 39.71
26	14 3 38.84	36.29	12 33 61.0	47.4	9.613	51.13	15 57.35	8.46	6.33	14 19 36.26
27	14 7 29.25	27.38	12 54 22.5	9.0	9.644	50.64	16 2.82	8.71	6.43	14 23 32.82
28	14 11 21.82	19.23	13 14 32.0	18.5	9.676	50.13	16 7.52	8.96	6.54	14 27 29.37
29	14 15 14.44	11.84	13 34 29.0	15.6	9.708	49.61	16 11.46	9.21	6.65	14 31 25.93
30	14 19 7.84	5.22	13 54 13.3	0.0	9.741	49.07	16 14.61	9.46	6.76	14 35 22.48
31	14 22 62.05	59.41	14 13 44.4	31.3	9.775	48.51	16 16.95	9.70	6.87	14 39 19.04
32	14 26 57.08	54.42	—14 32 61.9	48.9	9.809	-47.94	—16 18.49	16 9.94	1 6.98	14 43 15.59

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1874.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion. Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 1	14 26 57.08	54.42	—14 32 61.9	48.9	9.809	—47.94	—16 18.49	16 9.94	1 6.98	14 43 15.59
2	14 30 52.92	50.25	14 51 65.4	52.5	9.844	47.35	16 19.22	10.18	7.10	14 47 12.15
3	14 34 49.59	46.91	15 10 54.5	41.8	9.879	46.74	16 19.12	10.42	7.21	14 51 8.71
4	14 38 47.10	44.41	15 29 28.7	16.1	9.914	46.11	16 18.18	10.66	7.33	14 55 5.27
5	14 42 45.45	42.75	15 47 47.7	35.3	9.949	45.46	16 16.40	10.90	7.45	14 59 1.82
6	14 46 44.64	41.94	16 5 51.1	38.9	9.984	44.80	16 13.78	11.13	7.57	15 2 58.38
7	14 50 44.68	41.98	16 23 38.4	26.5	10.019	44.12	16 10.29	11.36	7.69	15 6 54.93
8	14 54 45.57	42.87	16 40 69.0	57.3	10.054	43.42	16 5.97	11.59	7.81	15 10 51.49
9	14 58 47.30	44.61	16 58 22.7	11.3	10.089	42.70	16 0.80	11.82	7.93	15 14 48.04
10	15 2 49.88	47.19	17 15 19.0	7.9	10.125	41.97	15 54.78	12.05	8.05	15 18 44.60
11	15 6 53.31	50.63	17 31 57.5	46.6	10.160	41.22	15 47.92	12.28	8.17	15 22 41.16
12	15 10 57.58	54.91	17 48 17.7	7.1	10.195	40.45	15 40.22	12.50	8.29	15 26 37.72
13	15 15 2.69	0.03	18 4 19.2	8.9	10.230	39.67	15 31.67	12.72	8.41	15 30 34.27
14	15 19 8.63	5.99	18 19 61.7	51.7	10.264	38.87	15 22.30	12.94	8.53	15 34 30.83
15	15 23 15.40	12.78	18 35 24.8	15.2	10.298	38.05	15 12.10	13.15	8.65	15 38 27.38
16	15 27 22.99	20.39	18 50 28.0	18.8	10.332	37.21	15 1.08	13.36	8.77	15 42 23.94
17	15 31 31.40	28.83	19 5 11.0	2.1	10.366	36.36	14 49.24	13.57	8.89	15 46 20.49
18	15 35 40.62	38.08	19 19 33.3	24.7	10.400	35.49	14 36.58	13.78	9.00	15 50 17.06
19	15 39 50.64	48.14	19 33 34.7	26.4	10.434	34.61	14 23.11	13.98	9.11	15 54 13.61
20	15 43 61.47	59.01	19 47 14.8	6.9	10.467	33.71	14 8.84	14.18	9.22	15 58 10.17
21	15 48 13.09	10.66	20 0 33.3	25.7	10.500	32.80	13 53.79	14.37	9.33	16 2 6.73
22	15 52 25.50	23.11	20 13 29.7	22.4	10.533	31.88	13 37.95	14.56	9.44	16 6 3.29
23	15 56 38.69	36.34	20 25 63.8	56.9	10.566	30.95	13 21.32	14.75	9.55	16 9 59.84
24	16 0 52.65	50.34	20 38 15.3	8.8	10.598	30.00	13 3.92	14.94	9.66	16 13 56.40
25	16 5 7.38	5.12	20 49 63.8	57.7	10.630	29.04	12 45.75	15.10	9.76	16 17 52.96
26	16 9 22.87	20.66	21 1 29.0	23.2	10.661	28.06	12 26.82	15.29	9.86	16 21 49.52
27	16 13 39.09	36.94	21 12 30.5	25.0	10.691	27.07	12 7.16	15.43	9.96	16 25 46.08
28	16 17 56.04	53.94	21 23 8.2	3.0	10.721	26.07	11 46.77	15.59	10.06	16 29 42.64
29	16 22 13.70	11.65	21 33 21.6	16.8	10.750	25.05	11 25.68	15.74	10.16	16 33 39.19
30	16 26 32.06	30.07	21 43 10.4	6.0	10.779	24.02	11 3.88	15.89	10.25	16 37 35.75
Dec. 1	16 30 51.09	49.16	21 52 34.4	30.3	10.807	22.97	10 41.40	16.04	10.34	16 41 32.31
2	16 35 10.79	8.92	22 1 33.2	29.5	10.834	21.92	10 18.26	16.18	10.42	16 45 28.87
3	16 39 31.12	29.32	22 10 6.7	3.3	10.860	20.86	9 54.48	16.32	10.50	16 49 25.43
4	16 43 52.05	50.32	22 18 14.4	11.3	10.885	19.78	9 30.11	16.45	10.58	16 53 21.99
5	16 48 13.56	11.90	22 25 56.1	53.3	10.909	18.69	9 5.14	16.58	10.65	16 57 18.55
6	16 52 35.64	34.05	22 33 11.6	9.1	10.931	17.59	8 39.63	16.70	10.72	17 1 15.10
7	16 56 58.23	56.73	22 39 60.6	58.4	10.952	16.48	8 13.60	16.82	10.79	17 5 11.66
8	17 1 21.32	19.90	22 46 22.9	20.9	10.972	15.36	7 47.08	16.94	10.85	17 9 8.22
9	17 5 44.86	43.52	22 52 18.3	16.5	10.990	14.23	7 20.09	17.05	10.91	17 13 4.78
10	17 10 8.83	7.57	22 57 46.6	45.0	11.007	13.10	6 52.67	17.16	10.97	17 17 1.34
11	17 14 33.19	32.02	23 2 47.5	46.2	11.023	11.96	6 24.86	17.27	11.02	17 20 57.90
12	17 18 57.91	56.82	23 7 21.0	19.9	11.037	10.82	5 56.68	17.38	11.07	17 24 54.46
13	17 23 22.95	21.94	23 11 26.7	25.9	11.050	9.67	5 28.18	17.48	11.11	17 28 51.01
14	17 27 48.28	47.35	23 15 4.8	4.1	11.061	8.51	4 59.40	17.58	11.15	17 32 47.57
15	17 32 13.86	13.02	23 18 15.0	14.5	11.071	7.34	4 30.37	17.67	11.19	17 36 44.13
16	17 36 39.67	38.92	23 20 57.2	56.8	11.079	6.17	4 1.11	17.74	11.22	17 40 40.69
17	17 41 5.66	5.00	23 23 11.4	11.1	11.086	5.00	3 31.68	17.84	11.24	17 44 37.25
18	17 45 31.80	31.23	23 24 57.4	57.2	11.091	3.83	3 2.09	17.92	11.26	17 48 33.81
19	17 49 58.06	57.59	23 26 15.2	15.0	11.096	2.66	2 32.38	17.98	11.28	17 52 30.37
20	17 54 24.42	24.04	23 27 4.8	4.7	11.099	1.48	2 2.56	18.05	11.29	17 56 26.93
21	17 58 50.83	50.54	23 27 26.2	26.2	11.101	- 0.30	1 32.69	18.11	11.30	18 0 23.48
22	18 3 17.29	17.09	23 27 19.3	19.3	11.102	+ 0.88	1 2.78	18.17	11.31	18 4 20.04
23	18 7 43.73	43.63	23 26 44.1	44.1	11.101	2.06	0 32.88	18.22	11.31	18 8 16.59
24	18 12 10.15	10.13	23 25 40.8	40.7	11.099	3.23	— 0 3.01	18.26	11.30	18 12 13·15
25	18 16 36.50	36.58	23 24 9.2	9.1	11.096	4.41	+ 0 26.79	18.30	11.29	18 16 9.71
26	18 21 2.77	2.94	23 22 9.4	9.3	11.092	5.58	0 56.49	18.32	11.28	18 20 6.28
27	18 25 28.91	29.17	23 19 41.4	41.3	11.087	6.75	1 26.09	18.34	11.25	18 24 2.83
28	18 29 54.91	55.26	23 16 45.5	45.2	11.080	7.91	1 55.54	18.36	11.22	18 27 59.40
29	18 34 20.72	21.16	23 13 21.6	21.2	11.072	9.07	2 24.80	18.37	11.19	18 31 55.96
30	18 38 46.33	46.86	23 9 29.7	29.2	11.062	10.23	2 53.84	18.38	11.16	18 35 52.52
31	18 43 11.69	12.32	23 5 10.0	9.4	11.051	11.39	3 22.60	18.38	11.12	18 39 49.07
32	18 47 36.77	37.49	—23 0 22.6	21.8	11.039	+12.55	+ 3 51.17	16 18.38	1 11.08	18 43 45.63

Note.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.19 from the Sidereal Interval.

WASHINGTON MERIDIAN.

Date. 1874.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1874.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Jan.. 1	11 33.38	2.397	72.93	34 .. 37	I.	Mar. 1	11 36.65	1.808	63.80	68 .. 71	I.
2	12 30.16	2.318	71.77	42 .. 45	II.	2	12 18.78	1.709	62.11	77 .. 80	II.
3	13 24.18	2.177	69.66	52 .. 55	II.	3	12 58.97	1.646	61.06	83 .. 86	II.
4	14 14.48	2.014	67.14	61 .. 64	II.	4	13 38.15	1.625	60.73	86 .. 89	II.
5	15 0.90	1.860	64.72	68 .. 71	II.	5	14 17.31	1.645	61.14	95 .. 98	II.
6	15 44.00	1.739	62.77	74 .. 77	II.	6	14 57.45	1.707	62.29	102 .. 105	II.
7	16 24.70	1.660	61.49	82 .. 85	II.	7	15 39.60	1.813	64.13	107 .. 110	II.
8	17 4.07	1.629	60.99	85 .. 88	II.	8	16 24.73	1.954	66.52	111 .. 114	II.
9	17 43.27	1.646	61.32	94 .. 97	II.	9	17 13.56	2.119	69.21	120 .. 123	II.
10	18 23.50	1.714	62.49	102 .. 105	II.	10	18 6.43	2.284	71.77	126 .. 129	II.
11	19 5.96	1.833	64.46	106 .. 109	II.	11	19 2.88	2.410	73.67	133 .. 136	II.
12	19 51.84	1.998	67.09	110 .. 113	II.	12	20 1.59	2.467	74.46	141 .. 144	II.
13	20 42.09	2.194	70.10	117 .. 120	II.	13	21 0.73	2.447	74.08	148 .. 151	II.
14	21 37.11	2.386	72.95	126 .. 129	II.	14	21 58.60	2.369	72.86	154 .. 157	II.
15	22 36.22	2.526	74.94	131 .. 134	II.	15	22 54.32	2.274	71.37		II.
16	23 37.63	2.568	75.50		II.	16	23 47.93	2.198	70.17		II.
18	0 38.69	2.502	74.55		I.	18	0 40.18	2.164	69.63		I.
19	1 37.23	2.370	72.61		I.	19	1 32.17	2.177	69.87		I.
20	2 32.34	2.225	70.45		I.	20	2 25.01	2.233	70.80		I.
21	3 24.16	2.104	68.68		I.	21	3 19.54	2.314	72.10		I.
22	4 13.73	2.036	67.66		I.	22	4 16.00	2.388	73.28	23 .. 26	I.
23	5 2.33	2.024	67.51	5 .. 8	I.	23	5 13.81	2.418	73.79	29 .. 32	I.
24	5 51.28	2.064	68.17	10 .. 13	I.	24	6 11.56	2.381	73.27	36 .. 39	I.
25	6 41.72	2.145	69.43	15 .. 18	I.	25	7 7.60	2.278	71.68	42 .. 45	I.
26	7 34.35	2.243	70.91	22 .. 25	I.	26	8 0.55	2.130	69.36	52 .. 55	I.
27	8 29.25	2.325	72.10	29 .. 32	I.	27	8 49.79	1.973	66.79	61 .. 64	I.
28	9 25.56	2.355	72.49	33 .. 36	I.	28	9 35.41	1.833	64.42	67 .. 70	I.
29	10 21.75	2.314	71.79	39 .. 42	I.	29	10 18.03	1.725	62.53	73 .. 76	I
30	11 16.13	2.207	70.11	47 .. 50	I.	30	10 58.49	1.654	61.26	82 .. 85	I.
31	12 7.39	2.061	67.83	59 .. 62	I.	31	11 37.74	1.624	60.71	85 .. 88	I.
Feb. 1	12 55.04	1.912	65.44	66 .. 69	II.	Apr. 1	12 16.77	1.635	60.90	94 .. 97	II.
2	13 39.32	1.783	63.35	71 .. 74	II.	2	12 56.55	1.687	61.82	101 .. 104	II.
3	14 20.89	1.688	61.81	81 .. 84	II.	3	13 38.03	1.777	63.41	106 .. 109	II.
4	15 0.69	1.636	60.97	83 .. 86	II.	4	14 22.13	1.902	65.54	109 .. 112	II.
5	15 39.76	1.628	60.91	90 .. 93	II.	5	15 9.51	2.051	67.99	115 .. 118	II.
6	16 19.20	1.666	61.64	98 .. 101	II.	6	16 0.55	2.199	70.40	123 .. 126	II.
7	17 0.10	1.751	63.15	105 .. 108	II.	7	16 54.82	2.318	72.30	129 .. 132	II.
8	17 43.61	1.884	65.38	108 .. 111	II.	8	17 51.38	2.382	73.28	137 .. 140	II.
9	18 30.84	2.056	68.14	112 .. 115	II.	9	18 48.64	2.377	73.19	145 .. 148	II.
10	19 22.42	2.246	71.08	122 .. 125	II.	10	19 45.07	2.318	72.28	153 .. 156	II.
11	20 18.48	2.419	73.63	128 .. 131	II.	11	20 39.76	2.239	71.01	156 .. 159	II.
12	21 18.02	2.525	75.15	136 .. 139	II.	12	21 32.64	2.172	69.90	165 .. 168	II.
13	22 19.06	2.540	75.27		II.	13	22 24.29	2.140	69.36		II.
14	23 19.27	2.465	74.11		II.	14	23 15.76	2.159	69.60		II.
16	0 17.00	2.343	72.28		II.	16	0 8.27	2.227	70.62		I.
17	1 11.75	2.223	70.48		I.	17	1 2.82	2.327	72.18		I.
18	2 3.98	2.138	69.21		I.	18	1 59.98	2.434	73.83		I.
19	2 54.77	2.103	68.72		I.	19	2 59.35	2.503	74.93		I.
20	3 45.33	2.119	69.04		I.	20	3 59.52	2.494	74.89	33 .. 36	I.
21	4 36.80	2.176	69.99	13 .. 16	I.	21	4 58.41	2.398	73.52	39 .. 42	I.
22	5 29.95	2.254	71.23	19 .. 22	I.	22	5 54.15	2.239	71.13	47 .. 50	I.
23	6 24.94	2.324	72.30	27 .. 30	I.	23	6 45.72	2.058	68.30	59 .. 62	I.
24	7 21.16	2.351	72.69	32 .. 35	I.	24	7 33.05	1.891	65.57	66 .. 69	I.
25	8 17.31	2.316	72.09	38 .. 41	I.	25	8 16.77	1.759	63.31	71 .. 74	I.
26	9 11.84	2.219	70.53	45 .. 48	I.	26	8 57.81	1.670	61.72	80 .. 83	I.
27	10 3.51	2.083	68.35	56 .. 59	I.	27	9 37.27	1.625	60.88	83 .. 86	I.
28	10 51.75	1.938	65.97	63 .. 66	I.	28	10 16.18	1.626	60.82	90 .. 93	I.
29	11 36.65	1.808	63.80	68 .. 71	I.	29	10 55.62	1.668	61.53	98 .. 101	I.
30	12 18.78	1.709	62.11	77 .. 80	I.	30	11 36.59	1.753	62.94	104 .. 107	I.
31	12 58.97	1.646	61.06	83 .. 86	II.	31	12 20.02	1.873	64.94	108 .. 111	I.

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Date. 1874.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1874.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	12 20.02	1.873	64.94	108 .. 111	II.	July 1	14 23.52	2.281	71.44	153 .. 156	II.
2	13 6.65	2.018	67.32	112 .. 115	II.	2	15 16.79	2.159	69.62	156 .. 159	II.
3	13 56.87	2.166	69.71	122 .. 125	II.	3	16 7.29	2.056	68.06	164 .. 167	II.
4	14 50.39	2.287	71.64	128 .. 131	II.	4	16 55.81	1.996	67.15	170 .. 173	II.
5	15 46.21	2.351	72.68	134 .. 137	II.	5	17 43.54	1.992	67.11	2 .. 5	II.
6	16 42.73	2.346	72.65	143 .. 146	II.	6	18 31.88	2.046	67.97	7 .. 10	II.
7	17 38.37	2.283	71.72	150 .. 153	II.	7	19 22.16	2.152	69.61	11 .. 14	II.
8	18 32.09	2.194	70.36	156 .. 159	II.	8	20 15.44	2.292	71.71	18 .. 21	II.
9	19 23.73	2.114	69.09	163 .. 166	II.	9	21 12.15	2.428	73.69	25 .. 28	II.
10	20 13.82	2.069	68.33	168 .. 171	II.	10	22 11.59	2.510	74.85		II.
11	21 3.42	2.074	68.36	2 .. 5	II.	11	23 11.93	2.498	74.63		II.
12	21 53.80	2.135	69.25		II.	13	0 10.76	2.387	72.96		I.
13	22 46.25	2.245	70.90		II.	14	1 6.01	2.212	70.33		I.
14	23 41.75	2.383	72.97		II.	15	1 56.81	2.023	67.43		I.
16	0 40.50	2.507	74.82		I.	16	2 43.27	1.857	64.79		I.
17	1 41.58	2.566	75.73		I.	17	3 26.27	1.733	62.77	78 .. 81	I.
18	2 42.89	2.522	75.16		I.	18	4 6.84	1.657	61 54	83 .. 86	I.
19	3 41.91	2.383	73.16	44 .. 47	I.	19	4 46.20	1.631	61.14	90 .. 93	I.
20	4 36.84	2.191	70.30	54 .. 57	I.	20	5 25.54	1.655	61.58	96 .. 96	I.
21	5 27.03	1.996	67.27	62 .. 65	I.	21	6 6.03	1.727	62.83	103 .. 106	I.
22	6 12.86	1.831	64.59	68 .. 71	I.	22	6 48.81	1.845	64.79	108 .. 111	I.
23	6 55.27	1.712	62.56	77 .. 80	I.	23	7 34.87	2.000	67.28	111 .. 114	I.
24	7 35.41	1.641	61.32	83 .. 86	I.	24	8 24.94	2.174	69.95	121 .. 124	I
25	8 14.46	1.621	60.90	86 .. 89	I.	25	9 19.07	2.331	72.29	127 .. 130	I.
26	8 53.59	1.647	61.31	95 .. 98	I.	26	10 16.37	2.430	73.71	134 .. 137	I.
27	9 33.91	1.720	62.49	102 .. 105	I.	27	11 15.06	2.442	73.85	142 .. 145	I.
28	10 16.50	1.835	64.35	107 .. 110	I.	28	12 13.00	2.374	72.81	149 .. 152	II.
29	11 2.24	1.982	66.71	111 .. 114	I.	29	13 8.67	2.261	71.10	155 .. 158	II.
30	11 51.72	2.142	69.22	120 .. 123	I.	30	14 1.48	2.143	69.35	163 .. 166	II.
31	12 44.90	2.283	71.41	126 .. 129	II.	31	14 51.78	2.058	68.08	168 .. 171	II.
June 1	13 40.87	2.368	72.74	133 .. 136	II.	Aug. 1	15 40.67	2.024	67.59	2 .. 5	II.
2	14 37.97	2.375	72.90	141 .. 144	II.	2	16 29.39	2.045	67.97	5 .. 8	II.
3	15 34.32	2.310	71.98	148 .. 151	II.	3	17 19.25	2.119	69.15	10 .. 13	II.
4	16 28.54	2.205	70.44	153 .. 156	II.	4	18 11.38	2.231	70.90	16 .. 19	II.
5	17 20.17	2.101	68.85	159 .. 162	II.	5	19 6.41	2.354	72.75	22 .. 25	II.
6	18 9.61	2.027	67.69	167 .. 170	II.	6	20 4.11	2.444	74.07	29 .. 32	II.
7	18 57.84	2.002	67.27	173 .. 2	II.	7	21 3.20	2.463	74.28	35 .. 38	II.
8	19 46.15	2.034	67.75	4 .. 7	II.	8	22 1.66	2.391	73.15	41 .. 44	II.
9	20 35.92	2.124	69.11	9 .. 12	II.	9	22 57.45	2.249	70.93		II.
10	21 28.43	2.259	71.13	13 .. 16	II.	10	23 49.37	2.076	68.22		II.
11	22 24.47	2.411	73.36		II.	12	0 37.17	1.911	65.58		I.
12	23 23.87	2.529	75.10		II.	13	1 21.33	1.776	63.39		I.
14	0 25.22	2.562	75.58		I.	14	2 2.77	1.685	61.89		I.
15	1 26.03	2.484	74.48		I.	15	2 42.57	1.639	61.16		I.
16	2 23.82	2.321	72.08		I.	16	3 21.83	1.640	61.25	94 .. 97	I.
17	3 17.15	2.120	69.06		I.	17	4 1.67	1.687	62.11	102 .. 105	I.
18	4 5.65	1.930	66.11	66 .. 69	I.	18	4 43.15	1.777	63.71	106 .. 109	I.
19	4 50.10	1.781	63.69	72 .. 75	I.	19	5 27.29	1.908	65.91	109 .. 112	I.
20	5 31.53	1.681	62.01	81 .. 84	I.	20	6 14.95	2.066	68.46	115 .. 118	I.
21	6 11.17	1.633	61.17	84 .. 87	I.	21	7 6.52	2.229	70.97	124 .. 127	I.
22	6 50.24	1.633	61.17	93 .. 96	I.	22	8 1.69	2.360	72.92	129 .. 132	I.
23	7 29.94	1.684	62.01	100 .. 103	I.	23	8 59.29	2.425	73.82	138 .. 141	I.
24	8 11.43	1.782	63.63	106 .. 109	I.	24	9 57.49	2.410	73.53	146 .. 149	I.
25	8 55.79	1.922	65.86	109 .. 112	I.	25	10 54.52	2.334	72.32	153 .. 156	I.
26	9 43.87	2.088	68.48	114 .. 117	I.	26	11 49.34	2.233	70.76	156 .. 159	I.
27	10 36.00	2.254	70.99	123 .. 126	I.	27	12 41.79	2.145	69.41	165 .. 168	II.
28	11 31.73	2.378	72.83	129 .. 132	I.	28	13 32.59	2.097	68.68	173 .. 2	II.
29	12 29.57	2.425	73.53	137 .. 140	II.	29	14 22.83	2.098	68.76	3 .. 6	II.
30	13 27.46	2.384	72.95	145 .. 148	II.	30	15 13.72	2.152	69.66	9 .. 12	II.
31	14 23.52	2.281	71.44	153 .. 156	II.	31	16 6.44	2.245	71.16	13 .. 16	II.

WASHINGTON MERIDIAN.

Date. 1874.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1874.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Sept. 1	17 1.59	2.352	72.84	20 .. 23	II.	Nov. 1	19 15.47	1.879	65.48	68 .. 71	II.
2	17 59.15	2.437	74.12	27 .. 30	II.	2	19 58.83	1.743	63.16	74 .. 77	II.
3	18 58.07	2.458	74.43	33 .. 36	II.	3	20 39.54	1.658	61.63	82 .. 85	II.
4	19 56.53	2.397	73.46	38 .. 41	II.	4	21 18.81	1.622	60.92	85 .. 88	II.
5	20 52.62	2.267	71.43	47 .. 50	II.	5	21 57.76	1.631	61.02	94 .. 97	II.
6	21 45.08	2.102	68.79	58 .. 61	II.	6	22 37.45	1.683	61.86		II.
7	22 33.51	1.938	66.12		II.	7	23 18.84	1.772	63.35		II.
8	23 18.30	1.801	63.83		II.	9	0 2.76	1.892	65.34		I.
10	0 0.26	1.703	62.15		II.	10	0 49.75	2.025	67.53		I.
11	0 40.36	1.646	61.20		I.	11	1 39.89	2.149	69.54		I.
12	1 19.64	1.634	61.01		I.	12	2 32.62	2.236	70.97		I.
13	1 59.11	1.663	61.58		I.	13	3 26.77	2.265	71.48	137 .. 140	I.
14	2 39.79	1.733	62.86	105 .. 108	I.	14	4 20.89	2.235	71.09	145 .. 148	I.
15	3 22.60	1.840	64.74	108 .. 111	I.	15	5 13.75	2.166	70.06	151 .. 154	I.
16	4 8.35	1.976	67.04	112 .. 115	I.	16	6 4.77	2.087	68.84	156 .. 159	I.
17	4 57.56	2.124	69.44	122 .. 125	I.	17	6 54.09	2.029	67.90	163 .. 166	I.
18	5 50.18	2.256	71.50	128 .. 131	I.	18	7 42.49	2.013	67.59	169 .. 172	I.
19	6 45.50	2.343	72.81	134 .. 137	I.	19	8 31.15	2.050	68.12	2 .. 5	I.
20	7 42.15	2.365	73.09	143 .. 146	I.	20	9 21.37	2.147	69.58	5 .. 8	I.
21	8 38.57	2.326	72.44	150 .. 153	I.	21	10 14.63	2.299	71.85	10 .. 13	I.
22	9 33.57	2.254	71.27	156 .. 159	I.	22	11 11.94	2.480	74.52	17 .. 20	I.
23	10 26.78	2.182	70.10	163 .. 166	I.	23	12 13.45	2.636	76.81	25 .. 28	II.
24	11 18.53	2.138	69.37	169 .. 172	I.	24	13 17.74	2.698	77.76	32 .. 35	II.
25	12 9.75	2.139	69.38	2 .. 5	II.	25	14 21.99	2.629	76.82	38 .. 41	II.
26	13 1.60	2.191	70.21	7 .. 10	II.	26	15 23.09	2.448	74.23	45 .. 48	II.
27	13 55.24	2.286	71.72	11 .. 14	II.	27	16 19.09	2.218	70.81	58 .. 61	II.
28	14 51.46	2.400	73.52	17 .. 20	II.	28	17 9.60	1.998	67.41	66 .. 69	II.
29	15 50.30	2.495	75.00	25 .. 28	II.	29	17 55.33	1.823	64.56	71 .. 74	II.
30	16 50.73	2.524	75.50	32 .. 35	II.	30	18 37.52	1.703	62.52	81 .. 84	II.
Oct. 1	17 50.84	2.465	74.64	37 .. 40	II.	Dec. 1	19 17.50	1.638	61.37	83 .. 86	II.
2	18 48.50	2.328	72.57	45 .. 48	II.	2	19 56.54	1.625	61.08	90 .. 93	II.
3	19 42.27	2.150	69.78	56 .. 59	II.	3	20 35.87	1.660	61.60	98 .. 101	II.
4	20 31.71	1.972	66.89	63 .. 66	II.	4	21 16.57	1.738	62.88	105 .. 108	II.
5	21 17.15	1.822	64.36	69 .. 72	II.	5	21 59.61	1.854	64.77		II.
6	21 59.49	1.713	62.45	77 .. 80	II.	6	22 45.75	1.993	66.98		II.
7	22 39.73	1.648	61.27		II.	7	23 35.28	2.132	69.14		II.
8	23 18.94	1.627	60.87		II.	9	0 27.83	2.238	70.81		I.
9	23 58.14	1.647	61.22		I.	10	1 22.26	2.285	71.57		I.
11	0 38.31	1.706	62.27		I.	11	2 16.99	2.262	71.27		I.
12	1 20.33	1.801	63.93		I.	12	3 10.45	2.186	70.16	149 .. 152	I.
13	2 4.98	1.923	66.02		I.	13	4 1.73	2.087	68.70	155 .. 158	I.
14	2 52.74	2.058	68.25	120 .. 123	I.	14	4 50.74	2.001	67.37	161 .. 164	I.
15	3 43.65	2.180	70.25	126 .. 129	I.	15	5 38.08	1.952	66.59	167 .. 170	I.
16	4 37.09	2.264	71.62	130 .. 133	I.	16	6 24.83	1.953	66.63	173 .. 2	I.
17	5 31.93	2.293	72.10	141 .. 144	I.	17	7 12.33	2.016	67.61	4 .. 7	I.
18	6 26.77	2.268	71.70	147 .. 150	I.	18	8 2.09	2.140	69.51	9 .. 12	I.
19	7 20.53	2.208	70.73	153 .. 156	I.	19	8 55.45	2.315	72.14	13 .. 16	I.
20	8 12.72	2.143	69.67	156 .. 159	I	20	9 53.34	2.508	74.93	20 .. 23	I.
21	9 3.58	2.102	68.95	165 .. 168	I.	21	10 55.46	2.654	77.03	28 .. 31	I.
22	9 53.94	2.103	68.91	173 .. 2	I.	22	11 59.89	2.689	77.53	34 .. 37	II.
23	10 44.95	2.157	69.71	3 .. 6	I.	23	13 3.52	2.588	76.07	41 .. 44	II.
24	11 37.89	2.264	71.33	9 .. 12	I.	24	14 3.36	2.387	73.16	52 .. 55	II.
25	12 33.87	2.406	73.49	13 .. 16	II.	25	14 57.83	2.155	69.69	61 .. 64	II.
26	13 33.34	2.545	75.60	21 .. 24	II.	26	15 46.95	1.948	66.47	68 .. 71	II.
27	14 35.58	2.625	76.83	29 .. 32	II.	27	16 31.69	1.790	63.92	77 .. 80	II.
28	15 38.53	2.599	76.54	35 .. 38	II.	28	17 13.31	1.688	62.25	82 .. 85	II.
29	16 39.52	2.466	74.64	41 .. 44	II.	29	17 53.17	1.643	61.49	86 .. 89	II.
30	17 36.39	2.268	71.69	51 .. 54	II.	30	18 32.60	1.651	61.61	95 .. 98	II.
31	18 28.28	2.060	68.44	61 .. 64	II.	31	19 12.79	1.706	62.53	102 .. 105	II.
32	19 15.47	1.879	65.48	68 .. 71	II.	32	19 54.84	1.805	64.15	107 .. 110	II.

MEAN PLACES FOR 1874.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
1	*d* Piscium	6.5	0 14 6.95	+3.086	+ 7 29 26.2	+20.06
2	44 Piscium	6	0 18 56.70	3.075	+ 1 14 31.6	19.99
3	10 Ceti	6	0 20 19.68	3.077	— 0 44 52.1	19.98
4	δ Piscium	4.5	0 42 8.77	3.108	+ 6 53 57.0	19.71
5	ε PISCIUM	4	0 56 24.31	3.110	7 12 41.0	19.48
6	ζ^1 Piscium	5.4	1 7 8.96	+3.131	+ 6 54 30.8	+19.14
7	μ Piscium	5	1 23 35.04	3.139	5 29 32.5	18.56
8	η PISCIUM	4.3	1 24 44.52	3.200	14 41 45.1	18.72
9	ν Piscium	5.4	1 34 52.52	3.119	4 50 55.2	18.34
10	ο PISCIUM	4	1 38 44.56	3.162	8 31 22.1	18.26
11	ξ^1 CETI	4.5	2 6 19.34	+3.170	+ 8 15 16.7	+17.07
12	ξ^2 Ceti	4	2 21 27.74	3.184	7 53 39.3	16.36
13	μ Ceti	4	2 38 7.97	3.235	9 34 50.4	15.42
14	π Arietis	6.5	2 42 15.81	3.338	16 56 22.2	15.28
15	ε Arietis	4.5	2 52 0.67	3.422	20 50 6.1	14.67
16	λ Ceti	6.5	2 52 58.17	+3.215	+ 8 24 16.6	+14.62
17	δ Arietis	4.5	3 4 25.64	3.422	19 14 55.2	13.91
18	ζ ARIETIS	4.5	3 7 39.71	3.437	20 34 34.5	13.64
19	*f* Tauri	4	3 23 55.25	3.307	12 30 10.7	12.63
20	η TAURI	3	3 39 59.81	3.554	23 42 49.5	11.46
21	*e* Tauri	5	3 41 21.71	+3.281	+10 45 13.0	+11.36
22	λ Tauri	3.4	3 53 42.08	3.317	12 7 57.7	10.51
23	A^1 Tauri	5.4	3 57 14.88	3.537	21 44 8.0	10.17
24	γ TAURI	4	4 12 37.46	3.408	15 19 18.1	9.05
25	υ^1 Tauri	5.4	4 18 46.21	3.582	22 31 33.6	8.55
26	ε TAURI	4.3	4 21 15.64	+3.496	+18 53 57.3	+ 8.37
27	α TAURI	1	4 28 41.53	3.436	16 15 15.3	7.61
28	τ Tauri	4.5	4 34 41.08	3.595	22 42 48.1	7.29
29	ι Tauri	5	4 55 33.99	3.583	21 24 28.3	5.53
30	11 ORIONIS	5	4 57 22.27	3.425	15 13 36.4	5.40
31	ο Tauri	6	5 20 4.07	+3.603	+21 49 38.2	+ 3.51
32	119 Tauri	6.5	5 24 49.71	3.517	18 29 54.1	3.08
33	ζ Tauri	3.4	5 30 7.01	3.586	21 3 49.1	2.59
34	χ^1 Orionis	5.4	5 46 55.28	3.552	20 15 1.8	+ 1.05
35	ν Orionis	5.4	6 0 22.76	3.428	14 46 52.6	— 0.06
36	η Geminorum	3.4	6 7 16.33	+3.624	+22 32 27.8	— 0.65
37	μ GEMINORUM	3	6 15 20.29	3.633	22 34 34.2	1.45
38	γ GEMINORUM	2.3	6 30 25.99	3.469	16 30 17.7	2.68
39	ξ Geminorum	4.3	6 38 13.20	3.373	13 1 45.5	3.50
40	ζ Geminorum	4	6 56 38.18	3.565	20 45 11.1	4.92
41	λ Geminorum	4.3	7 10 51.19	+3.456	+16 45 57.2	— 6.11
42	δ GEMINORUM	3.4	7 12 35.84	3.591	22 12 44.8	6.24
43	63 Geminorum	6.5	7 20 15.65	3.570	21 42 4.7	6.96
44	6 Canis Minoris	6.5	7 22 47.13	+3.346	+12 15 57.1	— 7.09

MEAN PLACES FOR 1874.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
45	68 Geminorum	6.5	7 26 25.02	+3.431	+16 5 46.1	— 7.34
46	*f* Geminorum	6	7 32 12.04	3.475	17 57 33.6	7.84
47	1 Cancri	6	7 49 50.28	3.418	16 7 30.5	9.25
48	5 Cancri	6	7 54 19.35	3.427	16 48 3.9	9.55
49	8 Cancri	6	7 58 3.37	3.351	13 28 32.0	9.93
50	μ^2 Cancri	5	8 0 20.93	+3.542	+21 56 51.5	—10.08
51	12 Cancri	6	8 1 39.89	3.361	14 0 20.3	10.20
52	ζ^1 Cancri	5.4	8 4 59.14	3.452	18 1 33.9	10.51
53	d^1 Cancri	6	8 16 8.90	3.447	18 44 6.7	11.23
54	29 Cancri	6	8 21 35.52	3.357	14 37 32.9	11.69
55	θ Cancri	6	8 24 24.63	+3.432	+18 31 7.5	—11.87
56	c^1 Cancri	6	8 30 15.60	3.257	10 5 34.6	12.23
57	39 Cancri	6	8 32 51.32	3.459	20 27 2.9	12.43
58	δ Cancri	4	8 37 31.42	3.422	18 36 57.0	12.96
59	A^2 Cancri	6	8 40 1.54	3.295	12 34 14.4	12.95
60	α Cancri	4	8 51 35.72	+3.290	+12 20 38.8	—13.68
61	κ CANCRI	5	9 0 55.26	3.255	11 10 27.0	14.22
62	π^2 Cancri	6	9 8 16.39	3.322	15 27 48.2	14.66
63	ω Leonis	6	9 21 42.62	3.220	9 36 13.3	15.50
64	*h* Leonis	6	9 25 12.31	3.225	10 16 11.5	15.70
65	10 Leonis	5.6	9 30 33.61	+3.174	+ 7 24 1.1	—15.92
66	ο Leonis	4.3	9 34 25.90	3.225	10 27 51.4	16.20
67	B. A. C. 3336	5.6	9 39 31.26	3.169	7 17 23.2	16.40
68	π Leonis	5	9 53 33.35	3.180	8 38 51.7	17.11
69	α LEONIS	1.2	10 1 39.65	3.203	12 34 56.8	17.42
70	43 Leonis	6	10 16 24.91	+3.144	+ 7 10 54.0	—18.14
71	45 Leonis	6	10 20 59.58	3.177	10 24 12.7	18.23
72	ρ LEONIS	4	10 26 10.59	3.166	9 57 15.8	18.40
73	34 Sextantis	6	10 36 7.06	3.103	4 14 25.4	18.74
74	*l* LEONIS	5	10 42 37.97	3.159	11 12 41.9	18.92
75	55 Leonis	6	10 49 13.65	+3.092	+ 1 24 31.9	—19.10
76	*d* Leonis	5	10 54 3.19	3.103	4 17 35.5	19.28
77	*c* Leonis	5	10 54 12.99	3.117	6 46 39.7	19.27
78	χ Leonis	5	10 58 31.06	3.101	8 0 58.4	19.42
79	p^5 Leonis	5	11 7 19.07	3.085	+ 0 36 55.6	19.58
80	φ Leonis	5.4	11 10 15.39	+3.053	— 2 57 48.3	—19.63
81	σ Leonis	4	11 14 38.33	3.097	+ 6 43 9.7	19.68
82	79 Leonis	6	11 17 34.45	3.084	+ 2 5 55.6	19.74
83	υ LEONIS	5.4	11 30 29.89	3.072	— 0 7 41.0	19.84
84	β Virginis	3.4	11 44 7.97	3.127	+ 2 28 28.1	20.29
85	10 Virginis	6	12 3 13.88	+3.074	+ 2 36 17.8	—20.28
86	η VIRGINIS	3.4	12 13 27.62	3.068	+ 0 2 1.7	20.03
87	*q* Virginis	6	12 27 16.67	3.092	— 8 45 23.8	19.89
88	*f* Virginis	6	12 30 18.11	+3.086	— 5 8 19.4	—19.97

MEAN PLACES FOR 1874.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
89	χ Virginis . .	5	12 32 45.01	+3.095	— 7 18 5.1	—19.89
90	γ Virginis . .	3.2	12 35 16.67	3.040	0 45 30.0	19.83
91	28 Virginis . .	6	12 35 26.98	3.100	6 48 21.9	19.83
92	38 Virginis . .	6	12 46 44.25	3.073	2 52 5.1	19.67
93	ψ Virginis . .	5	12 47 48.21	3.118	8 51 15.0	19.64
94	k Virginis . .	6	12 53 10.28	+3.089	— 3 7 49.8	—19.49
95	48 Virginis . .	6	12 57 24.88	3.086	2 59 2.5	19.45
96	θ VIRGINIS . .	4.5	13 3 25.68	3.101	4 51 55.9	19.31
97	α VIRGINIS . .	1	13 18 33.45	3.153	10 30 9.7	18.91
98	l^2 Virginis . .	5	13 25 25.10	3.118	5 36 16.7	18.73
99	h Virginis . .	5	13 26 20.03	+3.153	— 9 30 54.4	—18.69
100	m Virginis . .	6	13 35 0.04	3.143	8 4 0.6	18.35
101	83 Virginis . .	6	13 37 42.19	3.228	15 32 44.6	18.32
102	86 Virginis . .	6	13 39 13.63	3.189	11 47 39.7	18.20
103	89 Virginis . .	5	13 43 1.70	3.249	17 30 21.0	18.11
104	94 Virginis . .	6	13 59 37.61	+3.169	— 8 17 21.7	—17.36
105	κ Virginis . .	4.5	14 6 10.72	3.197	9 41 14.8	17.08
106	λ Virginis . .	5.4	14 12 17.73	3.240	12 47 24.4	16.78
107	2 Libræ . . .	6	14 16 38.89	3.220	11 8 16.1	16.69
108	5 Libræ . . .	6	14 39 1.08	3.300	14 55 39.5	15.45
109	α^2 LIBRÆ . . .	2.3	14 43 54.63	+3.307	—15 30 59.3	—15.20
110	ι^1 Libræ . . .	5.4	15 5 2.62	3.411	19 18 47.3	13.88
111	ζ^1 Libræ . . .	4	15 21 9.28	3.377	16 16 32.4	12.85
112	γ Libræ . . .	4.5	15 28 28.77	3.347	14 22 3.0	12.30
113	θ Libræ . . .	5.4	15 46 39.34	3.413	16 21 27.9	10.89
114	δ SCORPII . .	2.3	15 52 53.13	+3.536	—22 15 38.1	—10.56
115	β^1 SCORPII . .	2	15 58 6.74	3.478	19 27 30.7	10.19
116	ν^2 Scorpii . . .	4	16 4 40.55	3.481	19 7 51.4	9.64
117	σ Scorpii . . .	3.4	16 13 31.97	3.637	25 17 17.0	8.99
118	ψ Ophiuchi . .	5	16 16 43.92	3.504	19 44 25.7	8.79
119	χ Ophiuchi . .	6	16 19 43.42	+3.470	—18 10 5.2	— 8.49
120	α SCORPII . .	1.2	16 21 41.09	3.669	26 9 0.2	8.37
121	ω Ophiuchi . .	5	16 24 40.24	3.549	21 11 42.2	8.03
122	B. A. C. 5579 .	5	16 34 17.26	3.463	17 29 45.3	7.30
123	20 Ophiuchi . .	5	16 42 51.90	3.314	10 33 28.6	6.70
124	29 Ophiuchi . .	6	16 54 29.05	+3.504	—18 41 48.8	— 5.64
125	η Ophiuchi . .	2.3	17 3 9.21	3.436	15 33 59.1	4.80
126	ν Serpentis . .	5.4	17 13 44.48	3.372	12 42 59.0	3.99
127	θ Ophiuchi . .	3.4	17 14 16.41	3.682	24 52 17.5	4.02
128	ξ Serpentis . .	4.3	17 30 22.36	3.434	15 19 0.5	2.63
129	ο Serpentis . .	5.4	17 34 20.02	+3.370	—12 48 20.2	— 2.26
130	4 Sagittarii . .	5	17 52 5.98	3.661	23 48 6.7	— 0.70
131	μ^1 SAGITTARII .	4	18 6 13.68	+3.586	—21 5 21.5	+ 0.55

MEAN PLACES FOR 1874.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
132	21 Sagittarii . .	5	18 17 50.71	+3.573	−20 36 24.5	+ 1.54
133	λ Sagittarii . .	3	18 20 11.71	3.706	25 29 21.9	1.54
134	B. A. C. 6279 .	5.4	18 22 1.01	3.418	14 38 39.5	1.91
135	24 Sagittarii . .	6	18 26 11.76	3.667	24 7 23.6	2.29
136	ν^1 Sagittarii . .	5	18 46 33.67	3.626	22 53 50.1	4.05
137	ξ^2 Sagittarii . .	4	18 50 12.62	+3.581	−21 16 11.8	+ 4.36
138	ο Sagittarii . .	4	18 57 7.82	3.598	21 55 24.2	4.92
139	π Sagittarii . .	3	19 2 16.11	3.573	21 13 16.7	5.39
140	d SAGITTARII .	5	19 10 15.69	3.513	19 10 26.7	6.09
141	ρ^1 Sagittarii . .	4	19 14 21.89	3.487	18 4 55.1	6.46
142	υ Sagittarii . .	5.4	19 14 30.69	+3.444	−16 11 23.6	+ 6.36
143	e^2 Sagittarii . .	5	19 35 18.63	3.438	16 24 59.8	8.14
144	f Sagittarii . .	5	19 39 0.65	3.505	20 3 41.2	8.37
145	g Sagittarii . .	6.5	19 50 48.25	3.409	15 49 25.8	9.28
146	63 Sagittarii . .	6	19 54 55.02	3.366	13 58 59.1	9.71
147	ξ^2 Capricorni .	6	20 5 24.71	+3.350	−12 59 0.2	+10.28
148	α^2 CAPRICORNI .	3.4	20 11 3.70	3.333	12 56 0.6	10.87
149	ρ Capricorni .	5	20 21 40.24	3.430	18 13 41.0	11.65
150	τ^2 Capricorni .	5	20 32 13.47	3.362	15 23 43.6	12.33
151	ε Aquarii . .	4.3	20 40 51.34	3.257	9 57 19.4	12.93
152	μ AQUARII . .	5.4	20 45 51.34	+3.240	− 9 27 15.3	+13.26
153	θ Capricorni .	4	20 58 51.78	3.384	17 43 53.0	14.08
154	ν Aquarii . .	4.5	21 2 43.62	3.273	11 52 49.1	14.36
155	β AQUARII . .	3	21 24 55.49	3.164	6 7 26.3	15.64
156	ξ AQUARII . .	5.4	21 31 2.56	3.198	8 25 4.4	15.95
157	λ Capricorni .	5.6	21 39 45.07	+3.237	−11 56 44.8	+16.44
158	θ AQUARII . .	4.5	22 10 11.02	3.170	8 24 34.8	17.78
159	ρ Aquarii . .	5.6	22 13 34.10	3.163	8 27 8.7	17.98
160	γ Aquarii . .	4.3	22 15 8.94	3.104	2 1 16.2	18.04
161	ζ Aquarii . .	3.4	22 22 20.56	3.091	0 39 49.1	18.31
162	σ Aquarii . .	5.4	22 23 58.59	+3.181	−11 19 16.1	+18.41
163	η AQUARII . .	4.3	22 28 52.85	3.083	0 45 58.0	18.44
164	κ Aquarii . .	5	22 31 13.80	3.112	4 52 37.5	18.48
165	78 Aquarii . .	6	22 48 0.55	3.129	− 7 52 20.1	19.09
166	β Piscium . .	5.4	22 57 28.03	3.057	+ 3 8 31.6	19.31
167	φ Aquarii . .	4.5	23 7 47.86	+3.112	− 6 43 39.6	+19.38
168	γ Piscium . .	4	23 10 37.99	3.110	+ 2 35 39.8	19.63
169	κ Piscium . .	5.4	23 20 28.50	3.078	0 33 57.8	19.66
170	ι PISCIUM . .	4.5	23 33 28.24	3.085	4 56 37.4	19.48
171	19 Piscium . .	6	23 39 57.48	3.067	2 47 20.2	20.00
172	26 Piscium . .	6	23 48 41.20	+3.069	+ 6 22 16.8	+20.06
173	ω PISCIUM . .	4	23 52 50.52	3.078	6 9 57.4	19.94
174	c^2 Piscium . .	6	23 56 3.52	+3.066	+ 7 47 9.7	+20.02

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	15 36.2	57 9.2	−1.29	15 1.3	55 1.2	−0.96	14 53.8	54 33.4	−0.75
1.5	15 31.9	56 53.5	1.33	14 58.3	54 50.0	0.89	14 51.5	54 25.0	0.65
2.0	15 27.5	56 37.3	1.36	14 55.5	54 39.7	0.82	14 49.5	54 17.7	0.56
2.5	15 23.0	56 20.8	1.38	14 53.0	54 30.5	0.73	14 47.8	54 11.6	0.46
3.0	15 18.5	56 4.2	1.37	14 50.8	54 22.4	0.62	14 46.5	54 6.6	0.36
3.5	15 14.0	55 47.8	1.35	14 48.9	54 15.6	0.50	14 45.5	54 2.9	0.26
4.0	15 9.7	55 31.9	1.30	14 47.5	54 10.4	0.37	14 44.8	54 0.5	0.15
4.5	15 5.6	55 16.7	1.23	14 46.5	54 6.9	0.22	14 44.5	53 59.4	−0.03
5.0	15 1.7	55 2.5	1.13	14 46.1	54 5.2	−0.05	14 44 6	53 59.8	+0.10
5.5	14 58.2	54 49.7	1.01	14 46.2	54 5.6	+0.12	14 45.1	54 1.7	0.23
6.0	14 55.1	54 38.3	0.88	14 46.9	54 8.1	0.30	14 46.1	54 5.3	0.38
6.5	14 52.5	54 28.7	0.73	14 48.2	54 12.9	0.49	14 47.6	54 10.8	0.53
7.0	14 50.4	54 21.0	0.56	14 50.1	54 20.0	0.70	14 49.6	54 18.2	0.70
7.5	14 48.9	54 15.5	0.36	14 52.7	54 29.6	0.90	14 52.2	54 27.5	0.87
8.0	14 48.0	54 12.4	−0.16	14 56.0	54 41.7	1.11	14 55.3	54 38.9	1.04
8.5	14 47.9	54 11.7	+0.04	15 0.0	54 56.2	1.31	14 58.9	54 52.4	1.22
9.0	14 48.3	54 13.5	0.26	15 4.6	55 13.3	1.52	15 3.2	55 8.1	1.40
9.5	14 49.5	54 17.9	0.48	15 9.9	55 32.7	1.71	15 8.1	55 26.1	1.59
10.0	14 51.4	54 24.9	0.70	15 15.8	55 54.3	1.89	15 13.6	55 46.2	1.76
10.5	14 54.1	54 34.6	0.91	15 22.2	56 17.9	2.05	15 19.6	56 8.3	1.93
11.0	14 57.4	54 46.8	1.13	15 29.1	56 43.4	2.18	15 26.2	56 32.3	2.08
11.5	15 1.4	55 1.6	1.33	15 36.5	57 10.2	2.28	15 33.2	56 58.2	2.22
12.0	15 6.1	55 18.6	1.51	15 44.1	57 38.1	2.35	15 40.6	57 25.5	2.32
12.5	15 11.3	55 37.8	1.68	15 51.8	58 6.4	2.37	15 48.3	57 53.8	2.39
13.0	15 17.0	55 58.8	1.82	15 59.4	58 34.5	2.33	15 56.2	58 22.7	2.42
13.5	15 23.2	56 21.4	1.94	16 6.9	59 2.0	2.23	16 4.1	58 51.7	2.40
14.0	15 29.6	56 45.2	2.02	16 14.0	59 28.0	2 09	16 11.8	59 20.2	2.33
14.5	15 36.3	57 9.7	2.06	16 20.5	59 51.8	1.88	16 19.2	59 47.3	2.19
15.0	15 43.1	57 34.5	2.05	16 26.2	60 12.9	1.62	16 26.1	60 12.4	1.98
15.5	15 49.7	57 58.8	2.02	16 31.0	60 30.6	1.32	16 32.2	60 34.7	1.72
16.0	15 56.1	58 22.4	1.93	16 34.8	60 44.4	0.98	16 37.3	60 53.6	1.41
16.5	16 2.2	58 44.8	1.81	16 37.4	60 54.0	0.61	16 41.3	61 8.4	1.05
17.0	16 7.9	59 5.6	1.65	16 38.8	60 59.1	+0.24	16 44.1	61 18.5	0.64
17.5	16 12.9	59 24.2	1.44	16 38.9	60 59.7	−0.14	16 45 5	61 23.7	+0.22
18.0	16 17.2	59 39.9	1.18	16 37.9	60 55.8	0.50	16 45.5	61 23.8	−0.20
18.5	16 20.6	59 52.5	0.91	16 35.7	60 47.7	0.84	16 44.1	61 18.8	0.62
19.0	16 23.1	60 1.7	0.63	16 32.4	60 35.7	1.15	16 41.5	61 9.0	1.01
19.5	16 24.8	60 7.6	0.35	16 28.3	60 20.5	1.40	16 37.6	60 54.8	1.36
20.0	16 25.5	60 10.2	+0.07	16 23.3	60 2.4	1.61	16 32.7	60 86.6	1 67
20.5	16 25.2	60 9.4	−0.19	16 17.8	59 42.1	1.76	16 26.8	60 15.0	1.92
21.0	16 24.2	60 5.6	0.44	16 11.9	59 20.2	1.87	16 20.2	59 50.8	2.11
21.5	16 22.4	59 59 0	0.66	16 5.6	58 57.3	1.94	16 13.1	59 24.7	2.24
22.0	16 20.0	59 50.0	0.84	15 59.2	58 33.9	1.96	16 5.6	58 57.3	2.31
22.5	16 16.9	59 38.9	1.00	15 52.9	58 10.5	1.94	15 58.0	58 29.4	2.33
23.0	16 13.5	59 26.1	1.13	15 46.6	57 47.5	1.90	15 50.4	58 1.6	2.31
23.5	16 9.6	59 12.0	1.22	15 40.5	57 25.0	1.84	15 43.0	57 34.2	2.24
24.0	16 5.5	58 57.0	1.28	15 34.6	57 3.4	1.76	15 35.8	57 7.8	2.14
24.5	16 1.3	58 41.4	1.32	15 29.0	56 42.8	1.67	15 29.0	56 42.8	2.02
25.0	15 56.9	58 25.4	1.34	15 23.7	56 23.4	1.57	15 22.6	56 19.3	1.89
25.5	15 52.5	58 9.3	1.35	15 18.8	56 5.3	1.46	15 16.7	55 57.5	1.74
26.0	15 48.1	57 53.1	1.34	15 14.2	55 48.4	1.35	15 11.2	55 37.5	1.59
26.5	15 43.7	57 37.0	1.33	15 9.9	55 32.8	1.24	15 6.3	55 19.4	1.43
27.0	15 39.4	57 21.2	1.31	15 6.0	55 18.5	1.14	15 1 9	55 3.3	1.26
27.5	15 35.2	57 5.6	1.29	15 2.5	55 5.5	1.04	14 58.0	54 49.1	1.10
28.0	15 31.0	56 50.3	1.26	14 59.3	54 53.6	0.94	14 54.7	54 36.8	0.95
28.5	15 26.9	56 35.3	1.24	14 56.3	54 42.9	0.84	14 51.8	54 26.3	0.80
29.0	15 22.9	56 20.6	1.21	14 53.8	54 33.4	0.75	14 49.5	54 17.6	0.65
29.5	15 19.0	56 6.2	1.18	14 51.5	54 25.0	0.65	14 47.6	54 10.6	0.51
30.0	15 15.2	55 52.3	1.15	14 49.5	54 17.7	0.56	14 46.1	54 5.2	0.39
30.5	15 11.5	55 38.7	1.11	14 47.8	54 11.6	−0.46	14 45.0	54 1.3	0.27
31.0	15 8.0	55 25.6	1.07	$\Delta s = .272\ \Delta\pi$			14 44.3	53 58.8	0.15
31.5	15 4.6	55 13.1	−1.02				14 44.0	53 57.7	−0.04

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d 1.0	14′ 44″.1	53′ 57″.9	+0″.07	14′ 52″.4	54′ 28″.4	+0″.69	15′ 21″.0	56′ 13″.6	+1″.23
1.5	14 44.5	53 59.3	0.18	14 54.8	54 37.3	0.78	15 25.1	56 28.5	1.25
2.0	14 45.2	54 2.1	0.28	14 57.5	54 47.1	0.86	15 29.2	56 43.5	1.25
2.5	14 46.3	54 6.1	0.39	15 0.5	54 58.0	0.95	15 33.3	56 58.5	1.25
3.0	14 47.8	54 11.5	0.50	15 3.7	55 9.8	1.03	15 37.4	57 13.5	1.25
3.5	14 49.6	54 18.2	0.62	15 7.2	55 22.6	1.10	15 41.4	57 28.4	1.24
4.0	14 51.8	54 26.3	0.74	15 10.9	55 36.3	1.18	15 45.5	57 43.3	1.23
4.5	14 54.4	54 35.9	0.86	15 14.9	55 50.9	1.26	15 49.5	57 58.0	1.22
5.0	14 57.5	54 47.0	0.99	15 19.1	56 6.5	1.34	15 53.4	58 12.4	1.19
5.5	15 0.9	54 59.7	1.12	15 23.6	56 23.1	1.42	15 57.3	58 26.6	1.16
6.0	15 4.8	55 14.0	1.26	15 28.4	56 40.6	1.49	16 1.0	58 40.3	1.12
6.5	15 9.2	55 29.9	1.40	15 33.4	56 58.9	1.56	16 4.6	58 53.5	1.07
7.0	15 14.0	55 47.6	1.54	15 38.6	57 18.0	1.62	16 8.0	59 6.0	1.01
7.5	15 19.2	56 6.9	1.68	15 44.0	57 37.9	1.68	16 11.1	59 17.6	0.92
8.0	15 24.9	56 27.8	1.81	15 49.5	57 58.3	1.72	16 14.0	59 28.1	0.82
8.5	15 31.0	56 50.2	1.93	15 55.2	58 19.0	1.73	16 16.4	59 37.1	0.68
9.0	15 37.5	57 14.0	2.04	16 0.8	58 39.8	1.73	16 18.4	59 44.4	0.53
9.5	15 44.3	57 39.0	2.13	16 6.4	59 0.4	1.70	16 19.9	59 49.7	0.35
10.0	15 51.3	58 4.9	2.18	16 11.9	59 20.4	1.62	16 20.7	59 52.7	+0.15
10.5	15 58.5	58 31.2	2.20	16 17.0	59 39.2	1.51	16 20.8	59 53.3	−0.07
11.0	16 5.7	58 57.5	2.18	16 21.7	59 56.5	1.36	16 20.3	59 51.1	0.30
11.5	16 12.7	59 23.4	2.12	16 25.9	60 11.7	1.17	16 18.9	59 46.1	0.54
12.0	16 19.4	59 48.1	2.00	16 29.3	60 24.3	0.93	16 16.7	59 38.2	0.78
12.5	16 25.7	60 11.0	1.82	16 31.9	60 33.8	0.65	16 13.8	59 27.5	1.01
13.0	16 31.3	60 31.5	1.58	16 33.5	60 39.9	0.35	16 10.2	59 14.0	1.23
13.5	16 36.0	60 48.8	1.30	16 34.1	60 42.1	+0.02	16 5.8	58 58.1	1.42
14.0	16 39.7	61 2.4	0.96	16 33.6	60 40.3	−0.32	16 0.9	58 40.0	1.59
14.5	16 42.2	61 11.7	0.59	16 32.0	60 34.4	0.66	15 55.5	58 20.0	1.73
15.0	16 43.5	61 16.4	+0.19	16 29.3	60 24.5	0.99	15 49.6	57 58.6	1.83
15.5	16 43.4	61 16.2	−0.22	16 25.6	60 10.7	1.29	15 43.5	57 36.2	1.90
16.0	16 42.0	61 11.0	0.63	16 20.9	59 53.5	1.57	15 37.3	57 13.3	1.92
16.5	16 39.3	61 1.1	1.02	16 15.4	59 33.3	1.80	15 31.0	56 50.4	1.90
17.0	16 35.4	60 46.7	1.38	16 9.2	59 10.5	1.99	15 24.9	56 27.9	1.85
17.5	16 30.4	60 28.3	1.69	16 2.5	58 45.8	2.12	15 19.0	56 6.1	1.77
18.0	16 24.4	60 6.4	1.95	15 55.4	58 19.8	2.20	15 13.4	55 45.6	1.64
18.5	16 17.7	59 41.8	2.15	15 48.1	57 53.1	2.24	15 8.3	55 26.7	1.50
19.0	16 10.4	59 15.0	2.29	15 40.8	57 26.3	2.22	15 3.6	55 9.6	1.34
19.5	16 2.8	58 46.9	2.38	15 33.7	56 59.9	2.17	14 59.5	54 54.6	1.16
20.0	15 55.0	58 18.2	2.41	15 26.7	56 34.5	2.07	14 56.0	54 41.8	0.97
20.5	15 47.1	57 49.3	2.39	15 20.1	56 10.3	1.95	14 53.2	54 31.4	0.76
21.0	15 39.4	57 21.0	2.33	15 14.0	55 47.8	1.80	14 51.1	54 23.5	0.55
21.5	15 32.0	56 53.7	2.22	15 8.4	55 27.3	1.62	14 49.6	54 18.1	0.34
22.0	15 24.9	56 27.8	2.09	15 3.4	55 8.9	1.44	14 48.8	54 15.3	−0.13
22.5	15 18.3	56 3.6	1.94	14 59.0	54 52.9	1.24	14 48.7	54 15.0	+0.09
23.0	15 12.3	55 41.4	1.77	14 55.3	54 39.3	1.03	14 49.3	54 17.3	0.29
23.5	15 6.8	55 21.2	1.59	14 52.3	54 28.1	0.82	14 50.7	54 22.0	0.49
24.0	15 1.9	55 3.3	1.39	14 50.0	54 19.5	0.62	14 52.6	54 29.0	0.67
24.5	14 57.7	54 47.8	1.20	14 48.3	54 13.3	0.41	14 55.0	54 38.1	0.84
25.0	14 54.1	54 34.5	1.01	14 47.3	54 9.6	0.21	14 58.1	54 49.2	1.00
25.5	14 51.1	54 23.6	0.82	14 46.9	54 8.3	−0.02	15 1.5	55 2.0	1.13
26.0	14 48.7	54 14.9	0.63	14 47.2	54 9.1	+0.16	15 5.4	55 16.3	1.25
26.5	14 46.9	54 8.3	0.45	14 48.0	54 12.1	0.33	15 9.7	55 31.8	1.34
27.0	14 45.7	54 3.9	0.28	14 49.3	54 17.1	0.49	15 14.2	55 48.4	1.41
27.5	14 45.1	54 1.5	−0.13	14 51.1	54 23.8	0.63	15 18.9	56 5.6	1.45
28.0	14 44.9	54 0.9	+0.02	14 53.4	54 32.0	0.75	15 23.6	56 23.1	1.47
28.5	14 45.2	54 1.9	0.16	14 56.0	54 41.7	0.86	15 28.4	56 40.8	1.47
29.0	14 45.9	54 4.6	0.28	14 59.0	54 52.6	0.95	15 33.2	56 58.4	1.45
29.5	14 47.0	54 8.7	0.40	15 2.2	55 4.5	1.03	15 37.9	57 15.5	1.40
30.0	14 48.5	54 14.1	0.50	15 5.7	55 17.2	1.09	15 42.4	57 31.9	1.33
30.5	14 50.3	54 20.7	+0.60	15 9.3	55 30.6	1.14	15 46.6	57 47.4	1.25
31.0	$\Delta s = .272\,\Delta\pi$			15 13.1	55 44.6	1.18	15 50.5	58 1.9	1.16
31.5				15 17.1	55 59.0	+1.21	15 54.2	58 15.3	+1.06

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d 1.0	15′ 50″.5	58′ 1″.9	+1″.16	16′ 18″.4	59′ 44″.3	+0″.05	16′ 14″.2	59′ 28″.7	—1″.46
1.5	15 54.2	58 15.3	1.06	16 18.3	59 43.8	—0.14	16 9.2	59 10.6	1.55
2.0	15 57.5	58 27.4	0.96	16 17.5	59 41.0	0.32	16 4.1	58 51.6	1.61
2.5	16 0.4	58 38.3	0.85	16 16.2	59 36.2	0.47	15 58.7	58 32.1	1.64
3.0	16 3.0	58 47.8	0.74	16 14.5	59 29.8	0.60	15 53.4	58 12.4	1.64
3.5	16 5.3	58 56.0	0.63	16 12.3	59 21.8	0.72	15 48.1	57 52.9	1.62
4.0	16 7.1	59 2.9	0.52	16 9.8	59 12.6	0.82	15 42.9	57 33.7	1.58
4.5	16 8.6	59 8.5	0.41	16 7.0	59 2.3	0.90	15 37.8	57 15.0	1.53
5.0	16 9.8	59 12.8	0.31	16 3.9	58 51.1	0.97	15 32.9	56 56.9	1.48
5.5	16 10.7	59 16.0	0.21	16 0.7	58 39.1	1.03	15 28.1	56 39.5	1.42
6.0	16 11.2	59 17.9	0.11	15 57.2	58 26.5	1.07	15 23.5	56 22.8	1.36
6.5	16 11.4	59 18.6	+0.00	15 53.7	58 13.4	1.11	15 19.2	56 6.8	1.30
7.0	16 11.2	59 17.9	—0.11	15 50.0	57 59.9	1.15	15 15.1	55 51.7	1.23
7.5	16 10.7	59 16.0	0.22	15 46.2	57 45.9	1.18	15 11.2	55 37.3	1.16
8.0	16 9.8	59 12.8	0.33	15 42.3	57 31.6	1.20	15 7.5	55 23.8	1.10
8.5	16 8.5	59 8.1	0.45	15 38.3	57 17.1	1.23	15 4.0	55 11.0	1.03
9.0	16 6.9	59 1.9	0.58	15 34.3	57 2.3	1.25	15 0.8	54 59.1	0.95
9.5	16 4.8	58 54.1	0.71	15 30.2	56 47.2	1.26	14 57.8	54 48.2	0.88
10.0	16 2.2	58 44.8	0.85	15 26.0	56 32.0	1.27	14 55.1	54 38.2	0.80
10.5	15 59.2	58 33.9	0.98	15 21.9	56 16.8	1.26	14 52.6	54 29.2	0.71
11.0	15 55.8	58 21.4	1.10	15 17.8	56 1.7	1.25	14 50.4	54 21.1	0.62
11.5	15 52.1	58 7.5	1.21	15 13.8	55 46.9	1.23	14 48.5	54 14.2	0.52
12.0	15 47.9	57 52.3	1.32	15 9.8	55 32.4	1.19	14 47.0	54 8.6	0.41
12.5	15 43.5	57 35.9	1.41	15 6.0	55 18.4	1.13	14 45.9	54 4.5	0.29
13.0	15 38.7	57 18.6	1.48	15 2.4	55 5.2	1.07	14 45.2	54 1.9	0.15
13.5	15 33.8	57 0.6	1.52	14 59.1	54 52.9	0.98	14 44.9	54 1.0	—0.00
14.0	15 28.8	56 42.2	1.54	14 56.0	54 41.7	0.88	14 45.2	54 1.9	+0.16
14.5	15 23.8	56 23.7	1.54	14 53.3	54 31.8	0.76	14 46.0	54 4.8	0.33
15.0	15 18.8	56 5.3	1.51	14 51.1	54 23.5	0.62	14 47.3	54 9.8	0.51
15.5	15 13.9	55 47.5	1.46	14 49.3	54 17.0	0.47	14 49.3	54 17.0	0.69
16.0	15 9.3	55 30.5	1.38	14 48.0	54 12.3	0.31	14 51.9	54 26.4	0.89
16.5	15 5.0	55 14.6	1.27	14 47.3	54 9.7	—0.13	14 55.1	54 38.3	1.09
17.0	15 1.0	55 0.1	1.14	14 47.2	54 9.3	+0.07	14 59.0	54 52.5	1.28
17.5	14 57.5	54 47.3	0.99	14 47.7	54 11.3	0.27	15 3.5	55 9.1	1.48
18.0	14 54.6	54 36.4	0.82	14 48.9	54 15.7	0.47	15 8.6	55 28.0	1.67
18.5	14 52.2	54 27.6	0.64	14 50.8	54 22.6	0.68	15 14.4	55 49.1	1.85
19.0	14 50.4	54 21.1	0.44	14 53 4	54 32.1	0.90	15 20.7	56 12.3	2.02
19.5	14 49.3	54 17.0	0.24	14 56.7	54 44.2	1.10	15 27.5	56 37.4	2.16
20.0	14 48.9	54 15.4	—0.03	15 0.6	54 58.6	1.30	15 34.8	57 4.1	2.28
20.5	14 49.1	54 16.3	+0.19	15 5.2	55 15.4	1.50	15 42.4	57 32.0	2.36
21.0	14 50.1	54 19.8	0.40	15 10.4	55 34.5	1.68	15 50.2	58 0.6	2.40
21.5	14 51.7	54 25.9	0.61	15 16.1	55 55.6	1.84	15 58.0	58 29.5	2.40
22.0	14 54.1	54 34.5	0.82	15 22.4	56 18.5	1.97	16 5.8	58 58.0	2.34
22.5	14 57.1	54 45.6	1.02	15 29.0	56 42.9	2.08	16 13.3	59 25.4	2.23
23.0	15 0.7	54 58.9	1.20	15 35.9	57 8.4	2.16	16 20.3	59 51.1	2.05
23.5	15 4.9	55 14.3	1.37	15 43.1	57 34.5	2.19	16 26.6	60 14.4	1.82
24.0	15 9.6	55 31.7	1.52	15 50.2	58 0.7	2.18	16 32.1	60 34.6	1.54
24.5	15 14.8	55 50.7	1.64	15 57.3	58 26.6	2.12	16 36.6	60 51.1	1.20
25.0	15 20.3	56 11.0	1.74	16 4.0	58 51.5	2.01	16 39.9	61 3.4	0.83
25.5	15 26.1	56 32.4	1.81	16 10.3	59 14.7	1.86	16 42.0	61 11.0	0.44
26.0	15 32.1	56 54.3	1.84	16 16.1	59 35.8	1.66	16 42.8	61 13.8	+0.03
26.5	15 38.1	57 16.4	1.84	16 21.1	59 54 3	1.41	16 42.2	61 11.8	—0.36
27.0	15 44.0	57 38.2	1.80	16 25.3	60 9.6	1.13	16 40.4	61 5.2	0.75
27.5	15 49.8	57 59.3	1.72	16 28.5	60 21.4	0.83	16 37.4	60 54.1	1.10
28.0	15 55.3	58 19.4	1.61	16 30.7	60 29.4	0.51	16 33.3	60 39.0	1.40
28.5	16 0.4	58 38.0	1.47	16 31.8	60 33.6	+0.19	16 28.3	60 20.6	1.65
29.0	16 4.9	58 54.7	1.31	16 31.9	60 33.9	—0.13	16 22.6	59 59.5	1.86
29.5	16 8.9	59 9.2	1.12	16 31.0	60 30.5	0.43	16 16.2	59 36.3	2.01
30.0	16 12.2	59 21.4	0.91	16 29.1	60 23.6	0.71	16 9.5	59 11.6	2.10
30.5	16 14.8	59 31.0	0.69	16 26.3	60 13.5	0.96	16 2.5	58 46.0	—2.15
31.0	16 16.7	59 38.0	0.47	16 22.9	60 0.7	1.17	Δs = .272 Δπ		
31.5	16 17.9	59 42.4	+0.26	16 18.8	59 45.6	—1.34			

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	15 55.5	58 20.2	−2.14	15 17.5	56 0.4	−1.86	14 58.6	54 51.1	−1.26
1.5	15 48.6	57 54.7	2.10	15 11.7	55 39.2	1.69	14 54.8	54 37.2	1.06
2.0	15 41.8	57 29.8	2.04	15 6.4	55 20.0	1.52	14 51.7	54 25.7	0.86
2.5	15 35.3	57 5.9	1.95	15 1.8	55 2.9	1.34	14 49.2	54 16.6	0.66
3.0	15 29.1	56 43.2	1.84	14 57.7	54 47.9	1.16	14 47.4	54 9.9	0.46
3.5	15 23.3	56 21.9	1.72	14 54.2	54 35.0	0.99	14 46.1	54 5.4	0.28
4.0	15 17.9	56 2.0	1.59	14 51.2	54 24.2	0.82	14 45.5	54 3.2	−0.10
4.5	15 12.9	55 43.6	1.46	14 48.8	54 15.4	0.66	14 45.5	54 3.0	+0.06
5.0	15 8.3	55 26.8	1.34	14 46.9	54 8.4	0.50	14 45.9	54 4.6	0.21
5.5	15 4.1	55 11.6	1.21	14 45.5	54 3.2	0.36	14 46.8	54 8.0	0.35
6.0	15 0.4	54 57.8	1.08	14 44.6	53 59.7	0.23	14 48.2	54 13.0	0.47
6.5	14 57.1	54 45.6	0.95	14 44.1	53 57.8	−0.10	14 49.9	54 19.4	0.59
7.0	14 54.2	54 34.9	0.84	14 43.9	53 57.3	+0.02	14 52.0	54 27.0	0.69
7.5	14 51.6	54 25.6	0.72	14 44.2	53 58.2	0.13	14 54.4	54 35.7	0.77
8.0	14 49.4	54 17.5	0.61	14 44.8	54 0.4	0.24	14 57.0	54 45.5	0.85
8.5	14 47.6	54 10.8	0.50	14 45.7	54 3.9	0.34	14 59.9	54 56.2	0.92
9.0	14 46.1	54 5.4	0.40	14 47.0	54 8.6	0.44	15 3.1	55 7.6	0.98
9.5	14 45.0	54 1.3	0.29	14 48.6	54 14.5	0.54	15 6.4	55 19.7	1.04
10.0	14 44.2	53 58.5	0.19	14 50.6	54 21.6	0.64	15 9.9	55 32.5	1.09
10.5	14 43.8	53 56.9	−0.08	14 52.8	54 29.9	0.74	15 13.5	55 45.9	1.14
11.0	14 43.7	53 56.6	+0.03	14 55.4	54 39.5	0.85	15 17.3	55 59.8	1.19
11.5	14 44.0	53 57.6	0.15	14 58.4	54 50.3	0.96	15 21.2	56 14.3	1.23
12.0	14 44.7	54 0.1	0.27	15 1.7	55 2.5	1.07	15 25.3	56 29.4	1.28
12.5	14 45.8	54 4.1	0.40	15 5.4	55 16.0	1.19	15 29.6	56 45.0	1.32
13.0	14 47.3	54 9.7	0.54	15 9.4	55 31.0	1.31	15 34.0	57 1.2	1.37
13.5	14 49.3	54 17.1	0.69	15 13.9	55 47.4	1.43	15 38.6	57 17.9	1.41
14.0	14 51.8	54 26.3	0.84	15 18.8	56 5.3	1.55	15 43.2	57 35.0	1.44
14.5	14 54.9	54 37.4	1.01	15 24.0	56 24.6	1.66	15 48.0	57 52.5	1.47
15.0	14 58.4	54 50.5	1.17	15 29.6	56 45.2	1.78	15 52.8	58 10.3	1.49
15.5	15 2.5	55 5.6	1.34	15 35.6	57 7.1	1.88	15 57.7	58 28.2	1.49
16.0	15 7.2	55 22.7	1.52	15 41.9	57 30.2	1.96	16 2.5	58 45.9	1.47
16.5	15 12.4	55 41.9	1.68	15 48.4	57 54.2	2.03	16 7.2	59 3.3	1.42
17.0	15 18.2	56 3.1	1.84	15 55.1	58 18.8	2.07	16 11.8	59 19.9	1.35
17.5	15 24.4	56 26.1	1.99	16 1.9	58 43.6	2.07	16 16.0	59 35.5	1.24
18.0	15 31.2	56 50.9	2.13	16 8.6	59 8.3	2.03	16 19.8	59 49.5	1.10
18.5	15 38.3	57 17.2	2.25	16 15.1	59 32.3	1.95	16 23.1	60 1.7	0.92
19.0	15 45.8	57 44.7	2.33	16 21.3	59 54.8	1.81	16 25.8	60 11.4	0.70
19.5	15 53.5	58 13.0	2.38	16 26.9	60 15.5	1.62	16 27.7	60 18.3	0.45
20.0	16 1.3	58 41.6	2.38	16 31.8	60 33.5	1.37	16 28.7	60 22.0	+0.17
20.5	16 9.1	59 10.0	2.34	16 35.8	60 48.1	1.07	16 28.8	60 22.3	−0.12
21.0	16 16.6	59 37.6	2.24	16 38.8	60 59.1	0.75	16 27.9	60 19.0	0.43
21.5	16 23.6	60 3.5	2.08	16 40.7	61 6.1	0.40	16 26.0	60 12.0	0.74
22.0	16 30.1	60 27.1	1.85	16 41.4	61 8.6	+0.02	16 23.1	60 1.3	1.03
22.5	16 35.7	60 47.7	1.57	16 40.8	61 6.5	−0.37	16 19.2	59 47.2	1.31
23.0	16 40.3	61 4.6	1.23	16 38.9	60 59.7	0.77	16 14.5	59 30.0	1.56
23.5	16 43.7	61 17.1	0.85	16 35.8	60 48.1	1.16	16 9.1	59 10.1	1.77
24.0	16 45.8	61 24.9	0.44	16 31.4	60 32.1	1.49	16 3.0	58 47.8	1.93
24.5	16 46.5	61 27.6	+0.01	16 26.0	60 12.4	1.79	15 56.5	58 23.9	2.05
25.0	16 45.9	61 25.2	−0.42	16 19.8	59 49.5	2.02	15 49.7	57 58.8	2.12
25.5	16 43.8	61 17.7	0.83	16 12.9	59 24.1	2.21	15 42.7	57 33.1	2.15
26.0	16 40.5	61 5.3	1.22	16 5.5	58 56.8	2.33	15 35.7	57 7.4	2.13
26.5	16 35.9	60 48.5	1.57	15 57.7	58 28.3	2.40	15 28.8	56 42.2	2.07
27.0	16 30.3	60 27.9	1.86	15 49.8	57 59.4	2.41	15 22.2	56 18.0	1.97
27.5	16 23.8	60 4.1	2.09	15 42.0	57 30.6	2.37	15 16.0	55 55.2	1.83
28.0	16 16.7	59 37.9	2.26	15 34.4	57 2.6	2.29	15 10.3	55 34.1	1.68
28.5	16 9.1	59 10.1	2.37	15 27.1	56 35.9	2.17	15 5.1	55 15.0	1.50
29.0	16 1.2	58 41.3	2.42	15 20.2	56 10.7	2.02	15 0.5	54 58.2	1.30
29.5	15 53.3	58 12.1	2.42	15 13.9	55 47.4	1.85	14 56.6	54 43.8	1.10
30.0	15 45.5	57 43.3	2.37	15 8.2	55 26.3	1.67	14 53.4	54 31.9	0.89
30.5	15 37.9	57 15.5	2.28	15 3.1	55 7.5	−1.47	14 50.8	54 22.6	0.67
31.0	15 30.6	56 48.9	2.16	Δs = .272 Δπ			14 49.0	54 15.9	0.45
31.5	15 23.8	56 23.7	−2.02				14 47.9	54 11.9	−0.23

WASHINGTON MEAN TIME.

PHASES.

Month.	Full Moon.	Last Quarter.	New Moon.	First Quarter.	Full Moon.	Last Quarter.
	d h m	d h m	d h m	d h m	d h m	d h m
January	2 1 55.1	10 2 47.0	17 14 51.9	24 7 34.3	31 18 27.7	
February		8 23 20.7	16 2 7.0	22 17 37.3		
March	2 12 13.4	10 16 25.6	17 11 53.6	24 5 23.2		
April	1 6 11.1	9 5 12.2	15 20 44.5	22 18 55.4	30 23 1.4	
May		8 14 4.5	15 5 8.9	22 10 10.5	30 13 38.1	
June		6 20 10.3	13 13 44.4	21 2 52.2	29 1 39.8	
July		6 0 53.6	12 23 20.1	20 20 23.4	28 11 34.6	
August		4 5 38.9	11 10 51.6	19 13 44.5	26 20 20.5	
September		2 11 46.4	10 1 2.3	18 5 56.6	25 4 58.5	
October		1 20 30.2	9 17 53.4	17 20 21.1	24 14 12.8	31 8 51.7
November			8 12 25.6	16 8 45.5	23 0 25.9	30 1 21.0
December			8 6 58.0	15 19 16.4	22 11 48.3	29 21 27.8

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Apogee.	Perigee.	Apogee.	GREATEST LIBRATION.		
	d h	d h	d h	d h m	d h m	d h m
January	8 9.5	20 3.1		1 10 0.1 S.W.	14 9 35.1 S.E.	27 12 30.4 S.W.
February	5 3.9	17 7.6			11 12 8.7 S.E.	23 19 17.9 S.W.
March	4 14.9	17 18.2	31 16.2		11 18 42.6 S.E.	23 21 26.2 S.W.
April		15 5.5	27 22.2		8 23 21.9 N.E.	21 3 50.7 N.W.
May		13 12.9	25 13.2		6 18 26.3 N.E.	19 8 4.7 N.W.
June		10 8.6	22 7.2	2 14 11.0 N.E.	16 5 29.6 N.W.	28 23 1.7 N.E.
July		6 12.3	20 1.7		13 14 6.2 N.W.	26 3 57.3 N.E.
August		1 3.2	16 20.0		9 2 5.9 N.W.	22 23 33.9 N.E.
August		28 19.3				
September	13 12.3	26 1.0			4 16 29.3 N.W.	20 3 18.4 N.E.
October	10 20.8	24 12.5		2 8 37.7 N.W.	18 10 21.8 N.E.	30 12 49.7 N.W.
November	6 22.0	22 0.9			15 14 51.6 N.E.	27 20 11.3 N.W.
December	4 7.4	20 7.1			13 4 13.7 N.E.	26 0 35.6 N.W.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables:

I = the inclination to the ecliptic of the moon's equator = $1^\circ\ 28'.8$,

☊ = mean longitude of the moon's ascending node (see page 250),

= mean longitude of the descending node of the moon's equator,

C = the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc,

i, Δ, ☊$'$, and ☾ are defined on the next page, where their values for the year are given.

λ, β, a', and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

λ' = the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node, ☊.

$$\left.\begin{aligned} \Delta\lambda &= -0'.57 \sin 2\,(\text{☊} - \lambda) \\ a &= \sin I \cos\,(\text{☊} - \lambda) \\ \tan B &= \tan I \sin\,(\text{☊} - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\}\ \text{See table, page 345.}$$

The libration in latitude $= b = B - \beta$,

" " longitude $= l = \lambda' - \text{☾}$.

$$\sin C = \sin i\,\frac{\cos\,(\lambda' + \Delta - \text{☊})}{\cos \delta'} = -\sin i\,\frac{\cos\,(a' - \text{☊}')}{\cos b}.$$

WASHINGTON MEAN TIME.

Mean Noon.	MOON'S EQUATOR.			☾ Moon's Mean Longitude.
	i Inclination to the Earth's Equator.	Δ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascend'g Node on Earth's Equator.	
Jan. 0	22° 22′.8	224° 25′.3	357° 23′.9	70° 11′.7
10	22 22.2	223 52.1	357 25.5	201 57.5
20	22 21.7	223 18.9	357 27.1	333 43.4
30	22 21.1	222 45.7	357 28.6	105 29.2
Feb. 9	22 20.5	222 12.5	357 30.2	237 15.1
19	22 20.0	221 39.2	357 31.8	9 0.9
March 1	22 19.4	221 6.0	357 33.5	140 46.7
11	22 18.9	220 32.7	357 35.1	272 32.6
21	22 18.4	219 59.4	357 36.7	44 18.4
31	22 17.8	219 26.1	357 38.4	176 4.2
April 10	22 17.3	218 52.8	357 40.1	307 50.1
20	22 16.8	218 19.5	357 41.7	79 35.9
30	22 16.3	217 46.1	357 43.4	211 21.8
May 10	22 15.8	217 12.8	357 45.2	343 7.6
20	22 15.3	216 39.4	357 46.9	114 53.4
30	22 14.8	216 6.0	357 48.6	246 39.3
June 9	22 14.4	215 32.6	357 50.4	18 25.3
19	22 13.9	214 59.2	357 52.2	150 11.0
29	22 13.5	214 25.8	357 54.0	281 56.8
July 9	22 13.0	213 52.4	357 55.7	53 42.6
19	22 12.5	213 18.9	357 57.5	185 28.5
29	22 12.3	212 45.5	357 59.3	317 14.3
Aug. 8	22 11.7	212 12.0	358 1.2	89 0.1
18	22 11.3	211 38.6	358 3.0	220 46.0
28	22 10.8	211 5.1	358 4.9	352 31.8
Sept. 7	22 10.4	210 31.6	358 6.7	124 17.6
17	22 10.0	209 58.1	358 8.6	256 3.5
27	22 9.6	209 24.6	358 10.5	27 49.3
Oct. 7	22 9.2	208 51.1	358 12.6	159 35.2
17	22 8.8	208 17.5	358 14.3	291 21.0
27	22 8.4	207 44.0	358 16.3	63 6.8
Nov. 6	22 8.0	207 10.4	358 18.2	194 52.7
16	22 7.6	206 36.9	358 20.1	326 38.5
26	22 7.2	206 3.3	358 22.1	98 24.4
Dec. 6	22 6.9	205 29.7	358 24.0	230 10.2
16	22 6.5	204 56.2	358 26.0	1 56.0
26	22 6.1	204 22.6	358 28.0	133 41.9
36	22 5.8	203 50.0	358 30.0	265 27.7

Mean Solar Days.	Motion of ☾.
0.1	1° 19′.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	
1	0 32.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.88
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊—λ) or (☊—λ—180°.)

☊—λ	Δ λ	a^{-1}	B	☊—λ	☊—λ	Δ λ	a^{-1}	B	☊—λ
0°	0′.0	39	0° 0′.0	180°	46°	0′.6	56	1° 3′.9	134°
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

Δ λ has the sign of tan (λ—☊)

a **has the sign of cos (☊—λ)**

B **has the sign of sin (☊—λ)**

MERCURY, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	17 22 29.06	15.036	−22 40 5.6	−33.58	0 22 43.7	17 28 13.02	15.251	−22 52 24.3	−31.45
1	17 28 32.39	15.238	22 53 4.1	31.28	1 22 45.9	17 34 21.37	15.440	23 4 30.4	29.03
2	17 34 40.40	15.426	23 5 6.1	28.86	2 22 48.2	17 40 34.10	15.620	23 15 36.9	26.49
3	17 40 52.76	15.604	23 16 8.5	26.32	3 22 50.5	17 46 50.92	15.783	23 25 41.3	23.85
4	17 47 9.18	15.765	23 26 8.8	23.68	4 22 52.9	17 53 11.59	15.937	23 34 41.2	21.12
5	17 53 29.39	15.917	23 35 4.7	20.96	5 22 55.4	17 59 35.81	16.081	23 42 34.5	18.31
6	17 59 53.12	16.059	23 42 54.2	18.15	6 22 57.9	18 6 3.38	16.214	23 49 19.3	15.40
7	18 6 20.15	16.191	23 49 35.2	15.25	7 23 0.4	18 12 34.03	16.339	23 54 53.4	12.43
8	18 12 50.23	16.315	23 55 5.7	12.28	8 23 3.0	18 19 7.61	16.458	23 59 15.4	9.39
9	18 19 23.21	16.432	23 59 24.3	9.25	9 23 5.7	18 25 43.92	16.567	24 2 23.6	6.28
10	18 25 58.89	16.540	24 2 29.3	6.15	10 23 8.4	18 32 22.77	16.669	24 4 16.4	− 3.11
11	18 32 37.08	16.641	24 4 19.0	− 2.99	11 23 11.1	18 39 3.98	16.764	24 4 52.5	+ 0.11
12	18 39 17.61	16.735	24 4 52.3	+ 0.22	12 23 13.9	18 45 47.41	16.853	24 4 10.7	3.38
13	18 46 0.33	16.824	24 4 8.0	3.48	13 23 16.7	18 52 32.91	16.936	24 2 9.5	6.71
14	18 52 45.11	16.906	24 2 4.6	6.80	14 23 19.5	18 59 20.32	17.014	23 58 48.0	10.08
15	18 59 31.78	16.982	23 58 41.1	10.16	15 23 22.4	19 6 9.54	17.084	23 54 4.9	13.51
16	19 6 20.23	17.051	23 53 56.4	13.57	16 23 25.3	19 13 0.40	17.151	23 47 59.3	16.97
17	19 13 10.30	17.118	23 47 49.5	17.01	17 23 28.2	19 19 52.79	17.213	23 40 30.5	20.47
18	19 20 1.88	17.179	23 40 19.6	20.50	18 23 31.2	19 26 46.57	17.269	23 31 36.9	24.00
19	19 26 54.85	17.235	23 31 25.4	24.02	19 23 34.2	19 33 41.65	17.320	23 21 18.3	27.56
20	19 33 49.10	17.285	23 21 6.5	27.57	20 23 37.1	19 40 37.91	17.367	23 9 33.7	31.16
21	19 40 44.51	17.332	23 9 21.9	31.16	21 23 40.1	19 47 35.23	17.409	22 56 22.3	34.79
22	19 47 40.98	17.373	22 56 10.8	34.77	22 23 43.2	19 54 33.51	17.447	22 41 43.4	38.46
23	19 54 38.40	17.411	22 41 32.6	38.42	23 23 46.2	20 1 32.68	17.482	22 25 36.3	42.14
24	20 1 36.69	17.445	22 25 26.6	42.08	24 23 49.3	20 8 32.62	17.512	22 8 0.5	45.85
25	20 8 35.75	17.475	22 7 52.3	45.78	25 23 52.3	20 15 33.25	17.539	21 48 55.3	49.58
26	20 15 35.49	17.502	21 48 49.0	49.50	26 23 55.4	20 22 34.48	17.563	21 28 20.3	53.34
27	20 22 35.83	17.526	21 28 16.2	53.24	27 23 58.4	20 29 36.24	17.582	21 6 15.1	57.11
28	20 29 36.69	17.545	21 6 13.6	56.99					
29	20 36 37.96	17.561	20 42 40.7	60.76	29 0 1.5	20 36 38.41	17.599	20 42 39.1	60.90
30	20 43 39.59	17.574	20 17 37.1	64.54	30 0 4.6	20 43 40.94	17.612	20 17 32.1	64.69
31	20 50 41.48	17.583	19 51 2.7	68.33	31 0 7.7	20 50 43.74	17.621	19 50 53.9	68.50
Feb. 1	20 57 43.56	17.589	19 22 57.2	72.12	1 0 10.8	20 57 46.73	17.627	19 22 44.2	72.30
2	21 4 45.73	17.591	18 53 20.8	75.91	2 0 13.9	21 4 49.81	17.629	18 53 3.2	76.11
3	21 11 47.90	17.589	18 22 13.4	79.70	3 0 17.0	21 11 52.89	17.627	18 21 50.8	79.92
4	21 18 49.96	17.582	17 49 35.3	83.48	4 0 20.1	21 18 55.85	17.620	17 49 7.3	83.71
5	21 25 51.78	17.569	17 15 26.8	87.23	5 0 23.2	21 25 58.58	17.607	17 14 53.1	87.48
6	21 32 53.24	17.552	16 39 48.9	90.94	6 0 26.3	21 33 0.93	17.589	16 39 9.0	91 20
7	21 39 54.19	17.526	16 2 42.1	94.62	7 0 29.4	21 40 2.77	17.563	16 1 55.8	94.90
8	21 46 54.43	17.493	15 24 7.8	98.23	8 0 32.4	21 47 3.89	17.529	15 23 14.7	98.52
9	21 53 53.77	17.450	14 44 7.6	101.77	9 0 35.5	21 54 4.09	17.486	14 43 7.4	102.07
10	22 0 51.95	17.396	14 2 43.5	105.24	10 0 38.5	22 1 3.12	17.431	14 1 36.0	105.55
11	22 7 48.67	17.328	13 19 57.8	108.58	11 0 41.5	22 8 0.65	17.362	13 18 42.6	108.90
12	22 14 43.57	17.244	12 35 53.9	111.75	12 0 44.5	22 14 56.36	17.277	12 34 31.0	112.07
13	22 21 36.26	17.142	11 50 35.4	114.76	13 0 47.4	22 21 49.81	17.173	11 49 4.7	115.09
14	22 28 26.23	17.018	11 4 7.2	117.56	14 0 50.3	22 28 40.51	17.047	11 2 28.5	117.89
15	22 35 12.90	16.866	10 16 34.7	120.10	15 0 53.2	22 35 27.85	16.893	10 14 48.3	120.42
16	22 41 55.58	16.685	9 28 4.6	122.35	16 0 56.0	22 42 11.14	16.709	9 26 10.5	122.66
17	22 48 33.51	16.469	8 38 44.5	124.26	17 0 58.6	22 48 49.61	16.490	8 36 43.1	124.56
18	22 55 5.76	16.211	7 48 43.6	125.75	18 1 1.2	22 55 22.31	16.228	7 46 35.3	126.02
19	23 1 31.28	15.908	6 58 12.4	126.77	19 1 3.7	23 1 48.16	15.920	6 55 57.9	127.02
20	23 7 48.90	15.551	6 7 22.7	127.27	20 1 6.1	23 8 6.01	15.558	6 5 2.6	127.48
21	23 13 57.28	15.136	5 16 28.1	127.17	21 1 8.3	23 14 14.49	15.137	5 14 3.5	127.34
22	23 19 54.94	14.658	4 25 43.7	126.42	22 1 10.3	23 20 12.08	1 .652	4 23 15.7	126.53
23	23 25 40.29	14.109	3 35 25.7	124.94	23 1 12.1	23 25 57.21	14.097	3 32 55.8	124.99
24	23 31 11.59	13.487	2 45 52.5	122.70	24 1 13.7	23 31 28.13	13.467	2 43 22.0	122.69
25	23 36 27.02	12.786	1 57 22.8	119.63	25 1 15.0	23 36 42.97	12.758	1 54 53.5	119.54
26	23 41 24.66	12.004	1 10 17.1	115.71	26 1 16.0	23 41 39.83	11.968	1 7 50.8	115.55
27	23 46 2.58	11.142	− 0 24 55.8	110.92	27 1 16.7	23 46 16.77	11.098	− 0 22 34.3	110.68
28	23 50 18.82	10.198	+ 0 18 19.7	105.23	28 1 16.9	23 50 31.86	10.147	+ 0 20 34.3	104.91
29	23 54 11.50	+9.179	+ 0 59 8.2	+ 98.67	29 1 16.8	23 54 23.22	+9.121	+ 1 1 14.2	+98.28

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	23 54 11.50	+9.179	+ 0 59 8.2	+98.67	1 1 16.8	23 54 23.22	+9.121	+ 1 1 14.2	+98.28
2	23 57 38.82	8.086	1 37 9.0	91.26	2 1 16.3	23 57 49.07	8.022	1 39 4.8	90.80
3	0 0 39.11	6.928	2 12 2.0	83.02	3 1 15.4	0 0 47.78	6.860	2 13 46.0	82.50
4	0 3 10.94	5.716	2 43 28.0	74.02	4 1 13.9	0 3 17.95	5.646	2 44 59.0	73.45
5	0 5 13.12	4.459	3 11 9.2	64.30	5 1 12.0	0 5 18.44	4.389	3 12 26.2	63.70
6	0 6 44.74	3.172	3 34 49.4	53.95	6 1 9.6	0 6 48.40	3.104	3 35 51.8	53.34
7	0 7 45.26	1.870	3 54 14.7	43.07	7 1 6.6	0 7 47.32	1.806	3 55 2.3	42.46
8	0 8 14.52	+0.571	4 9 13.2	31.74	8 1 3.1	0 8 15.10	+0.513	4 9 46.4	31.16
9	0 8 12.85	-0.705	4 19 36.1	20.13	9 0 59.2	0 8 12.12	-0.754	4 19 55.7	19.57
10	0 7 41.05	1.936	4 25 18.2	+ 8.36	10 0 54.7	0 7 39.27	1.975	4 25 25.7	+ 7.89
11	0 6 40.42	3.104	4 26 17.2	- 3.43	11 0 49.7	0 6 37.84	3.132	4 26 14.3	- 3.82
12	0 5 12.74	4.184	4 22 35.3	15.01	12 0 44.3	0 5 9.64	4.199	4 22 24.1	15.30
13	0 3 20.44	5.153	4 14 20.0	26.19	13 0 38.6	0 3 17.12	5.156	4 14 3.1	26.37
14	0 1 6.41	5.993	4 1 43.0	36.78	14 0 32.4	0 1 3.17	5.984	4 1 23.0	36.85
15	23 58 33.96	6.685	3 45 1.3	46.54	15 0 25.9	23 58 31.06	6.666	3 44 41.2	46.49
16	23 55 46.81	7.217	3 24 37.4	55.28	16 0 19.2	23 55 44.49	7.189	3 24 19.7	55.13
17	23 52 48.92	7.578	3 0 57.6	62.83	17 0 12.4	23 52 47.36	7.544	3 0 44.7	62.59
					18 0 5.4	23 49 43.75	7.729	2 34 26.2	68.72
18	23 49 44.44	7.766	2 34 32.4	69.03	18 23 58.3	23 46 37.72	7.745	2 5 57.7	73.43
19	23 46 37.50	7.782	2 5 55.7	73.79	19 23 51.3	23 43 33.31	7.597	1 35 53.3	76.70
20	23 43 32.21	7.632	1 35 42.2	77.08	20 23 44.4	23 40 34.27	7.300	1 4 48.2	78.49
21	23 40 32.37	7.330	1 4 27.7	78.87	21 23 37.7	23 37 44.03	6.866	0 33 17.2	78.87
22	23 37 41.47	6.890	0 32 47.7	79.23	22 23 31.1	23 35 5.65	6.316	+ 0 1 52.8	77.95
23	23 35 2.60	6.332	+ 0 1 15.1	78.27	23 23 24.8	23 32 41.69	5.667	- 0 28 55.0	75.86
24	23 32 38.35	5.674	- 0 29 39.7	76.12	24 23 18.7	23 30 34.28	4.939	0 58 39.8	72.71
25	23 30 30.88	4.937	0 59 30.0	72.90	25 23 13.0	23 28 45.10	4.152	1 26 57.5	68.66
26	23 28 41.85	4.140	1 27 51.5	68.78	26 23 7.6	23 27 15.32	3.324	1 53 29.6	63.90
27	23 27 12.42	3.305	1 54 25.6	63.95	27 23 2.5	23 26 5.75	2.471	2 18 0.5	58.58
28	23 26 3.39	2.445	2 18 56.7	58.55	28 22 57.7	23 25 16.78	1.608	2 40 17.9	52.82
29	23 25 15.13	1.576	2 41 12.8	52.73	29 22 53.3	23 24 48.55	-0.746	3 0 13.2	46.75
30	23 24 47.73	-0.708	3 1 5.2	46.69	30 22 49.3	23 24 40.90	+0.104	3 17 40.5	40.49
31	23 24 41.04	+0.146	3 18 28.2	40.29	31 22 45.6	23 24 53.40	0.935	3 32 36.0	34.12
Apr. 1	23 24 54.59	0.980	3 33 18.2	33.87	1 22 42.2	23 25 25.58	1.741	3 44 58.2	27.73
2	23 25 27.87	1.788	3 45 34.0	27.45	2 22 39.1	23 26 16.76	2.518	3 54 47.3	21.39
3	23 26 20.19	2.566	3 55 15.9	21.08	3 22 36.3	23 27 26.18	3.262	4 2 4.7	15.10
4	23 27 30.77	3.310	4 2 25.5	14.76	4 22 33.8	23 28 53.06	3.972	4 6 52.7	8.93
5	23 28 58.89	4.020	4 7 5.2	8.58	5 22 31.6	23 30 36.56	4.647	4 9 14.4	- 2.91
6	23 30 43.44	4.694	4 9 18.4	- 2.55	6 22 29.7	23 32 35.85	5.288	4 9 13.6	+ 2.95
7	23 32 43.85	5.334	4 9 8.8	+ 3.32	7 22 28.0	23 34 50.11	5.894	4 6 53.9	8.64
8	23 34 59.19	5.938	4 6 40.4	9.01	8 22 26.5	23 37 18.52	6.468	4 2 20.1	14.15
9	23 37 28.64	6.510	4 1 57.8	14.52	9 22 25.2	23 40 0.30	7.010	3 55 36.1	19.48
10	23 40 11.41	7.050	3 55 5.1	19.84	10 22 24.2	23 42 54.74	7.522	3 46 46.6	24.63
11	23 43 6.78	7.560	3 46 7.0	24.98	11 22 23.4	23 46 1.12	8.006	3 35 55.7	29.59
12	23 46 14.04	8.041	3 35 7.7	29.93	12 22 22.8	23 49 18.79	8.465	3 23 7.9	34.39
13	23 49 32.53	8.498	3 22 11.8	34.72	13 22 22.3	23 52 47.14	8.897	3 8 26.9	39.01
14	23 53 1.66	8.928	3 7 23.1	39.32	14 22 22.0	23 56 25.63	9.309	2 51 57.3	43.45
15	23 56 40.87	9.337	2 50 46.0	43.75	15 22 21.8	0 0 13.77	9.700	2 33 42.7	47.74
16	0 0 29.66	9.726	2 32 24.3	48.03	16 22 21.8	0 4 11.07	10.073	2 13 46.9	51.88
17	0 4 27.57	10.097	2 12 21.8	52.15	17 22 22.0	0 8 17.14	10.439	1 52 13.6	55.87
18	0 8 34.19	10.452	1 50 42.1	56.13	18 22 22.3	0 12 31.61	10.773	1 29 6.1	59.71
19	0 12 49.17	10.793	1 27 28.7	59.96	19 22 22.7	0 16 54.16	11.104	1 4 27.9	63.43
20	0 17 12.17	11.122	1 2 44.9	63.66	20 22 23.3	0 21 24.53	11.425	0 38 22.1	67.02
21	0 21 42.95	11.441	0 36 33.9	67.23	21 22 24.0	0 26 2.47	11.736	- 0 10 51.7	70.48
22	0 26 21.26	11.750	- 0 8 58.8	70.67	22 22 24.8	0 30 47.80	12.041	+ 0 18 0.2	73.82
23	0 31 6.90	12.053	+ 0 19 57.4	73.99	23 22 25.7	0 35 40.37	12.340	0 48 10.8	77.04
24	0 35 59.76	12.351	0 50 11.9	77.19	24 22 26.8	0 40 40.07	12.634	1 19 37.3	80.15
25	0 40 59.70	12.643	1 21 41.8	80.23	25 22 27.9	0 45 46.76	12.924	1 52 16.9	83.14
26	0 46 6.60	12.932	1 54 24.5	83.26	26 22 29.2	0 51 0.43	13.216	2 26 7.1	86.02
27	0 51 20.42	13.222	2 28 17.3	86.12	27 22 30.6	0 56 21.13	13.509	3 1 4.8	88.77
28	0 56 41.25	13.514	3 3 17.1	88.85	28 22 32.1	1 1 48.88	13.802	3 37 7.3	91.43
29	1 2 9.09	13.805	3 39 21.3	91.40	29 22 33.8	1 7 23.67	14.098	4 14 12.7	93.99
30	1 7 43.93	14.099	4 16 27.7	94.02	30 22 35.5	1 13 5.59	14.398	4 52 17.8	96.42
31	1 13 25.87	14.397	+ 4 54 33.4	+96.44	31 22 37.4	1 18 54.79	14.703	+ 5 31 19.8	+98.72

MERCURY, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	1 13 25.87	14.397	+ 4 54 33.4	+96.44	1 22 37.4	1 18 54.79	14.703	+ 5 31 19.8	+98.72
2	1 19 15.04	14.701	5 33 35.6	98.72	2 22 39.4	1 24 51.39	15.015	6 11 15.6	100.91
3	1 25 11.57	15.011	6 13 31.0	100.88	3 22 41.5	1 30 55.60	15.335	6 52 2.3	102.96
4	1 31 15.64	15.329	6 54 16 8	102.91	4 22 43.7	1 37 7.55	15.663	7 33 36.6	104 88
5	1 37 27.43	15.655	7 35 49.7	104.81	5 22 46.1	1 43 27.48	16.000	8 15 55.1	106.64
6	1 43 47 15	15.990	8 18 6.3	106.54	6 22 48.6	1 49 55.63	16.347	8 58 54.1	108.25
7	1 50 15.05	16.335	9 1 2.7	108.13	7 22 51.3	1 56 32.23	16.706	9 42 29.6	109.68
8	1 56 51.33	16.691	9 44 35.0	109.53	8 22 54.1	2 3 17.56	17.074	10 26 37.1	110.91
9	2 3 36.28	17.057	10 28 38.7	110.74	9 22 57.1	2 10 11.88	17.454	11 11 11.8	111.93
10	2 10 30.15	17.434	11 13 9.0	111.75	10 23 0.2	2 17 15.44	17.845	11 56 8.4	112.73
11	2 17 33.19	17.821	11 58 0.6	112.51	11 23 3.4	2 24 28.48	18.244	12 41 21.0	113.28
12	2 24 45.64	18.218	12 43 7.6	113.03	12 23 6.9	2 31 51.27	18.655	13 26 43.4	113.54
13	2 32 7.75	18.625	13 28 23.7	113.26	13 23 10.5	2 39 23.98	19.072	14 12 8.3	113.48
14	2 39 39.70	19.038	14 13 41.7	113.18	14 23 14.2	2 47 6.78	19.494	14 57 27.5	113.07
15	2 47 21.63	19.457	14 58 53.5	112.75	15 23 18.1	2 54 59.78	19.920	15 42 32.6	112.29
16	2 55 13.64	19.877	15 43 50.7	111.95	16 23 22.2	3 3 2.96	20.345	16 27 14.1	111.10
17	3 3 15.73	20.297	16 28 23.8	110.74	17 23 26.5	3 11 16.29	20.764	17 11 21.8	109.47
18	3 11 27.84	20.711	17 12 22.6	109.09	18 23 31.0	3 19 39.54	21.172	17 54 44.7	107.36
19	3 19 49.76	21.114	17 55 36.4	106.98	19 23 35.5	3 28 12.41	21.564	18 37 11.3	104.76
20	3 28 21.18	21.501	18 37 53.8	104.38	20 23 40.3	3 36 54.48	21.933	19 18 29.2	101.64
21	3 37 1.62	21.865	19 19 2.5	101.26	21 23 45.2	3 45 45.01	22.275	19 58 25.9	97.99
22	3 45 50.49	22.202	19 58 50.0	97.62	22 23 50.2	3 54 43.34	22.567	20 36 48.9	93.83
23	3 54 47.02	22.502	20 37 4.2	93.47	23 23 55.3	4 3 48.50	22.842	21 13 25.7	89.16
24	4 3 50.27	22.761	21 13 32.6	88.82					
25	4 12 59.18	22.973	21 48 3.5	83.68	25 0 0.5	4 12 59.39	23.057	21 48 4.3	83.98
26	4 22 12.56	23.132	22 20 25.9	78.11	26 0 5.8	4 22 14.81	23.218	22 20 33.5	78.37
27	4 31 29.07	23.235	22 50 29.7	72.15	27 0 11.2	4 31 33.40	23.322	22 50 43.2	72.37
28	4 40 47.37	23.279	23 18 6.4	65.86	28 0 16.6	4 40 53.80	23.366	23 18 24.6	66.03
29	4 50 5.99	23.263	23 43 9.0	59.32	29 0 22.0	4 50 14 51	23.349	23 43 30.7	59.44
30	4 59 23.54	23.189	24 5 32.0	52.58	30 0 27.3	4 59 34.11	23.273	24 5 56.0	52.65
31	5 8 38.59	23.056	24 25 11.9	45.73	31 0 32.6	5 8 51.13	23.137	24 25 36.8	45.74
June 1	5 17 49.79	22.868	24 42 6.8	38.83	1 0 37.9	5 18 4.24	22.946	24 42 31.3	38.79
2	5 26 55.86	22.629	24 56 16.2	31.96	2 0 43.1	5 27 12.12	22.702	24 56 39.1	31.87
3	5 35 55.61	22.343	25 7 41.8	25.18	3 0 48.2	5 36 13.54	22.410	25 8 1.9	25.04
4	5 44 47.98	22.015	25 16 26.0	18.56	4 0 53.1	5 45 7.46	22.077	25 16 42.3	18.38
5	5 53 32.01	21.648	25 22 32.9	12.07	5 0 57.9	5 53 52.89	21.703	25 22 44.4	11.85
6	6 2 6.83	21.248	25 26 7.0	+ 5.82	6 1 2.6	6 2 28.97	21.297	25 26 13.0	+ 5.57
7	6 10 31.69	20.820	25 27 14.1	− 0.19	7 1 7.1	6 10 54.94	20.863	25 27 13.7	− 0.46
8	6 18 45.99	20.368	25 26 0.2	5.92	8 1 11.4	6 19 10.19	20.404	25 25 53.0	6.21
9	6 26 49.20	19.895	25 22 32.3	11.36	9 1 15.5	6 27 14.19	19.925	25 22 17.8	11.67
10	6 34 40.80	19.404	25 16 57.3	16.52	10 1 19.4	6 35 6.44	19.428	25 16 35.3	16.84
11	6 42 20.46	18.899	25 9 22.0	21.37	11 1 23.1	6 42 46.61	18.917	25 8 52.2	21.69
12	6 49 47.85	18.382	24 59 54.1	25.91	12 1 26.6	6 50 14.35	18.394	24 59 16.6	26.23
13	6 57 2.72	17.855	24 48 40.7	30.15	13 1 29.9	6 57 29.44	17.861	24 47 55.4	30.47
14	7 4 4.83	17.320	24 35 49.1	34.10	14 1 33.0	7 4 31.63	17.321	24 34 56.2	34.41
15	7 10 54.02	16.778	24 21 26.5	37.74	15 1 35.8	7 11 20.79	16.774	24 20 26.1	38.04
16	7 17 30.12	16.229	24 5 40.0	41.08	16 1 38.5	7 17 56.74	16.220	24 4 32.5	41.37
17	7 23 52.98	15.675	23 48 36.7	44.14	17 1 40.9	7 24 19.31	15.661	23 47 22.4	44.42
18	7 30 2.47	15.116	23 30 23.4	46.92	18 1 43.1	7 30 28.41	15.098	23 29 2.7	47.18
19	7 35 58.50	14.552	23 11 7.0	49.41	19 1 45.1	7 36 23.94	14.529	23 9 40.3	49.65
20	7 41 40.92	13.982	22 50 53.8	51.63	20 1 46.9	7 42 5.77	13.956	22 49 21.8	51.84
21	7 47 9.61	13.408	22 29 50.6	53.58	21 1 48.4	7 47 33.78	13.378	22 28 13.8	53.77
22	7 52 24.45	12.828	22 8 3.8	55.27	22 1 49.6	7 52 47.85	12.794	22 6 22.7	55.44
23	7 57 25.30	12.242	21 45 39.7	56.70	23 1 50.7	7 57 47.83	12.205	21 43 55.0	56.83
24	8 2 12.00	11.648	21 22 44.5	57.86	24 1 51.5	8 2 33.61	11.698	21 20 57.0	57.97
25	8 6 44.36	11.048	20 59 24.6	58.76	25 1 52.1	8 7 4.96	11.004	20 57 34.8	58.84
26	8 11 2.22	10.438	20 35 46.0	59.41	26 1 52.5	8 11 21.73	10.382	20 33 54.7	59.46
27	8 15 5.33	9.820	20 11 54.9	59.80	27 1 52.6	8 15 23.70	9.771	20 10 2.7	59.82
28	8 18 53.48	9.191	19 47 57.4	59.93	28 1 52.4	8 19 10.64	9.140	19 46 5.2	59.92
29	8 22 26.41	8.551	19 24 0.2	59.81	29 1 51.9	8 22 42.32	8.498	19 22 8.6	59.77
30	8 25 43.84	7.899	19 0 8.8	59.42	30 1 51 3	8 25 58.44	7.844	18 58 18.6	59.36
31	8 28 45.46	+7.234	+18 36 29.9	−58.78	31 1 50.5	8 28 58.71	+7.176	+18 34 41.9	−58.68

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	8 28 45.46	+7.234	+18 36 29.9	-58.78	1 1 50.5	8 28 58.71	+7.176	+18 34 41.9	-58.68
2	8 31 30.96	6.555	18 13 9.7	57.86	2 1 49.3	8 31 42.84	6.497	18 11 24.5	57.73
3	8 33 59.99	5.862	17 50 14.9	56.67	3 1 47.7	8 34 10.47	5.803	17 48 33.3	56.51
4	8 36 12.23	5.155	17 27 51.7	55.22	4 1 45.9	8 36 21.29	5.096	17 26 14.3	55.03
5	8 38 7.29	4.432	17 6 6.8	53.48	5 1 43.9	8 38 14.92	4.373	17 4 34.3	53.26
6	8 39 44.86	3.696	16 45 6.9	51.46	6 1 41.5	8 39 51.07	3.637	16 43 39.9	51.22
7	8 41 4.59	2.945	16 24 58.9	49.16	7 1 38.8	8 41 9.40	2.887	16 23 38.1	48.90
8	8 42 6.11	2.181	16 5 49.6	46.57	8 1 36.0	8 42 9.56	2.125	16 4 35.3	46.29
9	8 42 49.18	1.408	15 47 45.8	43.70	9 1 32.9	8 42 51.32	1.355	15 46 38.4	43.40
10	8 43 13.62	+0.626	15 30 54.3	40.55	10 1 29.2	8 43 14.51	+0.576	15 29 54.2	40.24
11	8 43 19.19	-0.162	15 15 21.8	37.11	11 1 25.3	8 43 18.93	-0.208	15 14 29.2	36.79
12	8 43 5.86	0.948	15 1 15.2	33.40	12 1 21.2	8 43 4.55	0.989	15 0 30.1	33.08
13	8 42 33.71	1.730	14 48 40.7	29.44	13 1 16.7	8 42 31.47	1.765	14 48 3.2	29.13
14	8 41 42.94	2.498	14 37 44.0	25.25	14 1 11.9	8 41 39.92	2.527	14 37 13.8	24.95
15	8 40 33.96	3.246	14 28 30.6	20.83	15 1 6.8	8 40 30.33	3.268	14 28 7.5	20.55
16	8 39 7.36	3.965	14 21 5.4	16.24	16 1 1.4	8 39 3.28	3.980	14 20 48.9	15.98
17	8 37 23.98	4.643	14 15 32.1	11.51	17 0 55.8	8 37 19.64	4.650	14 15 21.5	11.28
18	8 35 24.91	5.270	14 11 53.8	6.68	18 0 49.9	8 35 20.52	5.268	14 11 48.4	6.48
19	8 33 11.55	5.832	14 10 12.1	- 1.80	19 0 43.7	8 33 7.29	5.823	14 10 10.8	- 1.65
20	8 30 45.56	6.320	14 10 27.5	+ 3.07	20 0 37.4	8 30 41.62	6.303	14 10 29.4	+ 3.18
21	8 28 8.89	6.720	14 12 39.0	7.87	21 0 30.8	8 28 5.44	6.697	14 12 43.0	7.93
22	8 25 23.80	7.020	14 16 44.1	12.53	22 0 24.2	8 25 20.97	6.992	14 16 49.1	12.55
23	8 22 32.80	7.211	14 22 38.6	16.98	23 0 17.4	8 22 30.71	7.179	14 22 43.5	16.95
24	8 19 38.61	7.284	14 30 17.1	21.18	24 0 10.6	8 19 37.33	7.250	14 30 20.8	21.11
25	8 16 44.17	7.232	14 39 32.4	25.04	25 0 3.8	8 16 43.71	7.198	14 39 34.0	24.93
					25 23 57.0	8 13 52.85	7.020	14 50 14.7	28.39
26	8 13 52.50	7.052	14 50 16.1	28.53	26 23 50.3	8 11 7.80	6.715	15 2 13.4	31.44
27	8 11 6.71	6.743	15 2 18.5	31.60	27 23 43.8	8 8 31.55	6.285	15 15 19.9	34.04
28	8 8 29.85	6.307	15 15 29.1	34.22	28 23 37.5	8 6 7.10	5.734	15 29 23.3	36.18
29	8 6 4.94	5.749	15 29 37.0	36.36	29 23 31.4	8 3 57.25	5.069	15 44 12.2	37.80
30	8 3 54.83	5.075	15 44 30.3	37.98	30 23 25.6	8 2 4.66	4.299	15 59 33.5	38.90
31	8 2 2.18	4.296	15 59 55.9	39.07	31 23 20.1	8 0 31.68	3.435	16 15 15.2	39.51
Aug. 1	8 0 29.39	3.422	16 15 41.6	39.66	1 23 15.0	7 59 20.44	2.486	16 31 5.8	39.63
2	7 59 18.58	2.463	16 31 35.5	39.76	2 23 10.3	7 58 32.91	1.465	16 46 53.2	39.23
3	7 58 31.71	1.433	16 47 25.6	39.33	3 23 5.9	7 58 10.58	-0.387	17 2 24.6	38.32
4	7 58 10.25	-0.346	17 2 59.3	38.39	4 23 2.1	7 58 14.74	+0.740	17 17 28.6	36.92
5	7 58 15.48	+0.788	17 18 4.4	36.95	5 22 58.7	7 58 46.39	1.903	17 31 53.1	35.04
6	7 58 48.37	1.957	17 32 29.0	35.02	6 22 55.7	7 59 46.30	3.092	17 45 26.5	32.66
7	7 59 49.64	3.151	17 46 1.5	32.60	7 22 53.3	8 1 14.90	4.293	17 57 57.0	29.81
8	8 1 19.71	4.356	17 58 30.1	29.71	8 22 51.3	8 3 12.40	5.500	18 9 13.4	26.48
9	8 3 18.74	5.564	18 9 43.7	26.34	9 22 49.8	8 5 38.85	6.702	18 19 4.5	22.68
10	8 5 46.73	6.766	18 19 30.9	22.50	10 22 48.8	8 8 33.96	7.890	18 27 18.6	18.41
11	8 8 43.37	7.952	18 27 40.3	18.20	11 22 48.2	8 11 57.37	9.057	18 33 45.0	13.70
12	8 12 8.24	9.116	18 34 1.2	13.46	12 22 48.2	8 15 48.43	10.193	18 38 13.1	8.56
13	8 16 0.66	10.247	18 38 23.1	8.29	13 22 48.5	8 20 6.27	11.288	18 40 32.5	+ 2.99
14	8 20 19.75	11.336	18 40 35.8	+ 2.70	14 22 49.3	8 24 49.85	12.336	18 40 33.4	- 2.97
15	8 25 4.42	12.378	18 40 29.6	- 3.27	15 22 50.5	8 29 57.97	13.331	18 38 7.1	9.28
16	8 30 13.44	13.364	18 37 56.2	9.58	16 22 52.1	8 35 29.20	14.260	18 33 5.7	15.88
17	8 35 45.35	14.284	18 32 47.6	16.18	17 22 54.0	8 41 21.88	15.119	18 25 22.6	22.75
18	8 41 38.51	15.134	18 24 57.4	23.03	18 22 56.2	8 47 34.26	15.899	18 14 52.5	29.78
19	8 47 51.14	15.905	18 14 20.8	30.04	19 22 58.8	8 54 4.41	16.597	18 1 32.3	36.92
20	8 54 21.31	16.594	18 0 54.6	37.15	20 23 1.6	9 0 50.24	17.208	17 45 20.4	44.08
21	9 1 6.96	17.196	17 44 37.4	44.28	21 23 4.6	9 7 49.65	17.730	17 26 17.2	51.16
22	9 8 5.98	17.709	17 25 30.0	51.32	22 23 7.9	9 15 0.53	18.161	17 4 25.6	58.11
23	9 15 16.28	18.134	17 3 35.1	58.22	23 23 11.3	9 22 20.69	18.503	16 39 49.5	64.84
24	9 22 35.69	18.469	16 38 56.9	64.91	24 23 14.7	9 29 48.03	18.761	16 12 35.2	71.28
25	9 30 2.14	18.722	16 11 41.5	71.30	25 23 18.3	9 37 20.59	18.939	15 42 50.9	77.35
26	9 37 33.70	18.895	15 41 57.3	77.32	26 23 22.0	9 44 56.48	19.041	15 10 45.7	83.02
27	9 45 8.51	18.994	15 9 53.2	82.95	27 23 25.7	9 52 34.01	19.077	14 36 29.6	88.25
28	9 52 44.90	19.029	14 35 39.2	88.15	28 23 29.3	10 0 11.73	19.055	14 0 13.4	93.03
29	10 0 21.44	19.006	13 59 25.9	92.89	29 23 33.0	10 7 48.28	18.984	13 22 8.0	97.34
30	10 7 56.80	18.934	13 21 24.3	97.17	30 23 36.6	10 15 22.59	18.869	12 42 24.9	101.18
31	10 15 29.92	18.820	+12 41 45.5	-100.99	31 23 40.2	10 22 53.70	18.719	+12 1 14.8	-104.58

MERCURY, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	10 22 59.87	18.671	+12 0 40.3	−104.37	1 23 43.7	10 30 20.89	18.543	+11 18 48.5	−107.55
2	10 30 25.92	18.496	11 18 19.3	107.32	2 23 47.1	10 37 43.57	18.345	10 35 16.3	110.09
3	10 37 47.50	18.300	10 34 52.7	109.85	3 23 50.5	10 45 1.30	18.131	9 50 47.7	112.25
4	10 45 4.18	18.088	9 50 29.9	112.01	4 23 53.7	10 52 13.78	17.908	9 5 31.2	114.06
5	10 52 15.65	17.867	9 5 19.3	113.81	5 23 56.9	10 59 20.81	17.678	8 19 35.8	115.53
6	10 59 21.73	17.637	8 19 29.8	115.28					
7	11 6 22.31	17.409	7 33 8.5	116.45	7 0 0.0	11 6 22.30	17.446	7 33 8.6	116.69
8	11 13 17.35	17.178	6 46 22.6	117.35	8 0 2.9	11 13 18.19	17.212	6 46 16.9	117.59
9	11 20 6.90	16.951	5 59 18.0	118.00	9 0 5.8	11 20 8.54	16.983	5 59 6.5	118.23
10	11 26 51.03	16.728	5 12 0.7	118.42	10 0 8.6	11 26 53.43	16.759	5 11 43.7	118.65
11	11 33 29.86	16.510	4 24 35.6	118.65	11 0 11.3	11 33 32.98	16.539	4 24 13.2	118.87
12	11 40 3.56	16.299	3 37 7.3	118.67	12 0 14.0	11 40 7.35	16.326	3 36 39.7	118.88
13	11 46 32.28	16.096	2 49 40.7	118.53	13 0 16.5	11 46 36.70	16.122	2 49 8.1	118.73
14	11 52 56.22	15.900	2 2 19.0	118.26	14 0 19.0	11 53 1.24	15.924	2 1 41.6	118.45
15	11 59 15.57	15.714	1 15 5.5	117.84	15 0 21.3	11 59 21.16	15.737	1 14 23.6	118.02
16	12 5 30.56	15.536	+ 0 28 3.5	117.30	16 0 23.7	12 5 36.68	15.558	+ 0 27 17.3	117.47
17	12 11 41.37	15.367	− 0 18 44.0	116.64	17 0 25.9	12 11 48.00	15.388	− 0 19 34.3	116.81
18	12 17 48.24	15.206	1 5 14.4	115.88	18 0 28.1	12 17 55.35	15.226	1 6 8.6	116.04
19	12 23 51.35	15.055	1 51 25.6	115.03	19 0 30.2	12 23 58.92	15.074	1 52 23.4	115.18
20	12 29 50.93	14.912	2 37 15.3	114.09	20 0 32.2	12 29 58.94	14.930	2 38 16.6	114.23
21	12 35 47.16	14.776	3 22 41.4	113.07	21 0 34.2	12 35 55.59	14.793	3 23 45.9	113.20
22	12 41 40.23	14.648	4 7 42.2	111.98	22 0 36.2	12 41 49.06	14.664	4 8 49.7	112.10
23	12 47 30.34	14.528	4 52 15.9	110.82	23 0 38.1	12 47 39.55	14.544	4 53 26.2	110.93
24	12 53 17.65	14.415	5 36 20.9	109.59	24 0 39.7	12 53 27.23	14.430	5 37 33.7	109.69
25	12 59 2.31	14.308	6 19 55.6	108.30	25 0 41.7	12 59 12.25	14.323	6 21 10.8	108.40
26	13 4 44.49	14.208	7 2 58.8	106.95	26 0 43.5	13 4 54.78	14.222	7 4 16.3	107.04
27	13 10 24.33	14.113	7 45 28.7	105.54	27 0 45.2	13 10 34.96	14.127	7 46 48.2	105.62
28	13 16 1.97	14.024	8 27 24.2	104.08	28 0 46.9	13 16 12.92	14.037	8 28 45.5	104.15
29	13 21 37.51	13.938	9 8 44.0	102.56	29 0 48.5	13 21 48.78	13.951	9 10 6.9	102.63
30	13 27 11.05	13.858	9 49 26.6	100.98	30 0 50.1	13 27 22.63	13.871	9 50 51.0	101.04
Oct. 1	13 32 42.70	13.780	10 29 30.9	99.36	1 0 51.7	13 32 54.58	13.792	10 30 56.5	99.40
2	13 38 12.51	13.705	11 8 55.3	97.67	2 0 53.3	13 38 24.68	13.717	11 10 22.0	97.71
3	13 43 40.54	13.631	11 47 38.7	95.94	3 0 54.8	13 43 52.93	13.643	11 49 6.3	95.97
4	13 49 6.81	13.558	12 25 39.9	94.15	4 0 56.3	13 49 19.53	13.569	12 27 8.2	94.17
5	13 54 31.35	13.486	13 2 57.2	92.28	5 0 57.7	13 54 44.32	13.497	13 4 26.0	92.30
6	13 59 54.15	13.413	13 39 29.1	90.37	6 0 59.2	14 0 7.38	13.423	13 40 58.3	90.38
7	14 5 15.17	13.339	14 15 14.5	88.40	7 1 0.6	14 5 28.65	13.349	14 16 43.8	88.40
8	14 10 34.35	13.260	14 50 11.7	86.35	8 1 2.0	14 10 48.06	13.269	14 51 40.9	86.34
9	14 15 51.63	13.178	15 24 18.8	84.24	9 1 3.4	14 16 5.55	13.186	15 25 47.6	84.22
10	14 21 6.86	13.090	15 57 34.5	82.06	10 1 4.6	14 21 20.97	13.098	15 59 2.8	82.04
11	14 26 19.89	12.995	16 29 56.9	79.80	11 1 5.9	14 26 34.17	13.002	16 31 24.5	79.77
12	14 31 30.53	12.890	17 1 24.1	77.46	12 1 7.2	14 31 44.96	12.896	17 2 50.7	77.42
13	14 36 38.56	12.776	17 31 54.1	75.03	13 1 8.3	14 36 53.11	12.781	17 33 19.5	74.97
14	14 41 43.68	12.648	18 1 24.9	72.52	14 1 9.5	14 41 58.32	12.651	18 2 48.8	72.45
15	14 46 45.57	12.506	18 29 54.1	69.90	15 1 10.6	14 47 0.27	12.508	18 31 16.2	69.82
16	14 51 43.83	12.346	18 57 19.4	67.19	16 1 11.6	14 51 58.55	12.346	18 58 39.5	67.10
17	14 56 38.01	12 165	19 23 38.4	64.37	17 1 12.6	14 56 52.71	12.163	19 24 56.1	64.27
18	15 1 27.57	11.961	19 48 48.3	61.43	18 1 13.4	15 1 42.20	11.957	19 50 3.4	61.31
19	15 6 11.90	11.729	20 12 45.9	58.36	19 1 14.2	15 6 26.40	11.722	20 13 58.0	58.23
20	15 10 50.31	11.467	20 35 28.3	55.15	20 1 14.9	15 11 4.62	11.457	20 36 37.1	55.00
21	15 15 21.99	11.167	20 56 52.1	51.80	21 1 15.5	15 15 36.03	11.154	20 57 57.2	51.64
22	15 19 46.01	10.827	21 16 53.5	48.28	22 1 16.0	15 19 59.69	10.811	21 17 54.5	48.10
23	15 24 1.34	10 443	21 35 28.3	44.59	23 1 16.3	15 24 14.59	10.423	21 36 24.9	44.40
24	15 28 6.86	10.007	21 52 32.2	40.70	24 1 16.4	15 28 19.58	9.983	21 53 23.9	40.49
25	15 32 1.19	9.510	22 8 0.1	36.59	25 1 16.4	15 32 13.28	9.481	22 8 46.6	36.36
26	15 35 42.81	8.947	22 21 46.7	32.25	26 1 16.1	15 35 54.15	8.913	22 22 27.5	32.00
27	15 39 10.07	8.312	22 33 46.1	27.65	27 1 15.6	15 39 20.52	8.273	22 34 20.8	27.39
28	15 42 21.14	7.596	22 43 51.3	22.74	28 1 14.8	15 42 30.59	7.552	22 44 19.5	22.46
29	15 45 13.94	6.789	22 51 54.9	17.51	29 1 13.7	15 45 22.26	6.739	22 52 16.2	17.22
30	15 47 46.22	5.885	22 57 48.7	11.91	30 1 12.3	15 47 53.29	5.831	22 58 2.9	11.61
31	15 49 55.57	4.876	23 1 23.3	− 5.90	31 1 10.5	15 50 1.28	4.817	23 1 30.1	− 5.59
32	15 51 39.36	+3.755	−23 2 28.5	+ 0.54	32 1 8.3	15 51 43.61	+3.693	−23 2 27.8	+ 0.86

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1874.	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	15 51 39.36	+3.755	−23 2 28.5	+ 0.54	1 1 8.3	15 51 43.61	+3.693	−23 2 27.8	+ 0.86
2	15 52 54.90	2.520	23 0 53.0	7.49	2 1 5.6	15 52 57.63	2.456	23 0 44.7	7.80
3	15 53 39.42	+1.171	22 56 24.8	14.95	3 1 2.4	15 53 40.62	+1.107	22 56 9.2	15.25
4	15 53 50.25	−0.286	22 48 51.0	22.96	4 0 58.6	15 53 49.95	−0.346	22 48 28.5	23.23
5	15 53 24.91	1.841	22 37 58.6	31.50	5 0 54.2	15 53 23.23	1.895	22 37 30.1	31.73
6	15 52 21.32	3.469	22 23 34.9	40.55	6 0 49.2	15 52 18.46	3.512	22 23 1.6	40.72
7	15 50 38.11	5.136	22 5 28.9	50.01	7 0 43.5	15 50 34.36	5.165	22 4 52.5	50.09
8	15 48 14.85	6.798	21 43 33.0	59.67	8 0 37.2	15 48 10.61	6.809	21 42 55.9	59.65
9	15 45 12.33	8.395	21 17 45.0	69.30	9 0 30.3	15 45 8.09	8.385	21 17 10.0	69.15
10	15 41 32.97	9.856	20 48 9.8	78.52	10 0 22.7	15 41 29.23	9.825	20 47 40.0	78.23
11	15 37 20.96	11.103	20 15 3.2	86.84	11 0 14.6	15 37 18.25	11.050	20 14 42.1	86.41
12	15 32 42.34	12.060	19 38 53.2	93.72	12 0 6.0	15 32 41.13	11.991	19 38 43.8	93.17
					12 23 57.2	15 27 45.48	12.581	19 0 25.4	97.98
13	15 27 44.80	12.660	19 0 20.8	98.60	13 23 48.2	15 22 40.41	12.771	18 20 40.4	100.32
14	15 22 37.89	12.852	18 20 20.5	100.96	14 23 39.2	15 17 35.75	12.546	17 40 32.0	99.89
15	15 17 31.36	12.618	17 39 57.2	100.48	15 23 30.4	15 12 41.45	11.910	17 1 9.0	96.55
16	15 12 35.53	11.965	17 0 21.0	97.01	16 23 21.9	15 8 6.99	10.902	16 23 41.2	90.32
17	15 8 0.03	10.933	16 22 43.6	90.64	17 23 13.8	15 4 0.66	9.580	15 49 13.2	81.62
18	15 3 53.27	9.584	15 48 10.2	81.74	18 23 6.4	15 0 29.06	8.019	15 18 39.5	70.90
19	15 0 21.90	7.996	15 17 36.0	70.82	19 22 59.6	14 57 37.02	6.299	14 52 41.1	58.78
20	14 57 30.70	6.252	14 51 41.9	58.51	20 22 53.5	14 55 27.37	4.497	14 31 44.2	45.88
21	14 55 22.43	4.430	14 30 53.5	45.45	21 22 48.2	14 54 1.29	2.680	14 16 0.8	32.75
22	14 53 58.14	2.598	14 15 21.8	32.20	22 22 43.5	14 53 18.44	−0.902	14 5 30.5	19.86
23	14 53 17.37	−0.811	14 5 5.6	19.24	23 22 39.6	14 53 17.42	+0.799	14 0 2.5	+ 7.62
24	14 53 18.57	+0.893	13 59 52.7	+ 6.98	24 22 36.3	14 53 55.94	2.392	13 59 17.5	− 3.71
25	14 53 59.36	2.486	13 59 23.2	− 4.35	25 22 33.6	14 55 11.27	3.863	14 2 52.4	14.00
26	14 55 16.91	3.954	14 3 13.0	14.61	26 22 31.5	14 57 0.36	5.205	14 10 20.5	23.15
27	14 57 8.10	5.290	14 10 55.1	23.70	27 22 29.9	14 59 20.09	6.419	14 21 14.3	31.15
28	14 59 29.79	6.497	14 22 1.4	31.64	28 22 28.7	15 2 7.46	7.508	14 35 6.6	38.04
29	15 2 18.94	7.578	14 36 4.8	38.46	29 22 28.0	15 5 19.57	8.483	14 51 31.3	43.86
30	15 5 32.62	8.544	14 52 38.8	44.21	30 22 27.6	15 8 53.75	9.349	15 10 3.9	48.70
Dec. 1	15 9 8.18	9.402	15 11 19.1	48.98	1 22 27.6	15 12 47.55	10.119	15 30 21.8	52.64
2	15 13 3.16	10.164	15 31 43.0	52.86	2 22 27.8	15 16 58.77	10.803	15 52 4.5	55.78
3	15 17 15.39	10.841	15 53 30.2	55.94	3 22 28.3	15 21 25.47	11.409	16 14 53.4	58.19
4	15 21 42.92	11.441	16 16 22.4	58.30	4 22 29.0	15 26 5.90	11.950	16 38 32.5	59.96
5	15 26 24.03	11.975	16 40 3.4	60.02	5 22 30.0	15 30 58.60	12.432	17 2 46.9	61.16
6	15 31 17.26	12.451	17 4 18.7	61.17	6 22 31.1	15 36 2.19	12.860	17 27 23.8	61.85
7	15 36 21.25	12.874	17 28 55.4	61.82	7 22 32.4	15 41 15.51	13.244	17 52 11.9	62.09
8	15 41 34.85	13.254	17 53 42.5	62.03	8 22 33.8	15 46 37.60	13.592	18 17 1.0	61.94
9	15 46 57.12	13.597	18 18 29.9	61.86	9 22 35.3	15 52 7.61	13.904	18 41 42.5	61.46
10	15 52 27.22	13.906	18 43 9.1	61.35	10 22 37.0	15 57 44.76	14.188	19 6 8.7	60.68
11	15 58 4.37	14.186	19 7 32.5	60.55	11 22 38.8	16 3 28.41	14.446	19 30 12.7	59.61
12	16 3 47.95	14.442	19 31 33.2	59.47	12 22 40.7	16 9 18.01	14.683	19 53 48.2	58.31
13	16 9 37.41	14.676	19 55 5.1	58.15	13 22 42.6	16 15 13.06	14.902	20 16 49.9	56.81
14	16 15 32.26	14.892	20 18 2.9	56.64	14 22 44.7	16 21 13.15	15.103	20 39 13.1	55.10
15	16 21 32.08	15.091	20 40 22.1	54.93	15 22 46.8	16 27 17.89	15.290	21 0 53.5	53.24
16	16 27 36.51	15.276	21 1 58.3	53.06	16 22 49.0	16 33 26.97	15.465	21 21 47.2	51.22
17	16 33 45.24	15.449	21 22 47.7	51.04	17 22 51.3	16 39 40.12	15.629	21 41 50.8	49.06
18	16 39 57.99	15.612	21 42 46.9	48.88	18 22 53.6	16 45 57.12	15.782	22 1 1.3	46.78
19	16 46 14.56	15.763	22 1 52.8	46.60	19 22 56.0	16 52 17.67	15.927	22 19 15.6	44.38
20	16 52 34.63	15.906	22 20 2.7	44.20	20 22 58.5	16 58 41.62	16.066	22 36 31.0	41.89
21	16 58 58.06	16.044	22 37 13.8	41.71	21 23 1.0	17 5 8.87	16.198	22 52 45.4	39.30
22	17 5 24.78	16.175	22 53 23.9	39.12	22 23 3.5	17 11 39.16	16.324	23 7 56.3	36.60
23	17 11 54.51	16.298	23 8 30.6	36.43	23 23 6.1	17 18 12.38	16.443	23 22 1.7	33.84
24	17 18 27.12	16.417	23 22 31.9	33.67	24 23 8.8	17 24 48.39	16.555	23 34 59.7	30.99
25	17 25 2.50	16.528	23 35 26.0	30.83	25 23 11.5	17 31 27.07	16.664	23 46 48.4	28.06
26	17 31 40.52	16.636	23 47 11.0	27.91	26 23 14.2	17 38 8.31	16.768	23 57 26.0	25.06
27	17 38 21.08	16.739	23 57 45.0	24.92	27 23 17.0	17 44 51.97	16.867	24 6 51.1	22.01
28	17 45 4.04	16.837	24 7 6.8	21.88	28 23 19.8	17 51 37.94	16.961	24 15 2.1	18.88
29	17 51 49.28	16.930	24 15 14.7	18.76	29 23 22.7	17 58 26.13	17.052	24 21 57.0	15.69
30	17 58 36.72	17.020	24 22 6.7	15.58	30 23 25.6	18 5 16.45	17.137	24 27 34.8	12.45
31	18 5 26.27	17.105	24 27 41.9	12.35	31 23 28.5	18 12 8.75	17.218	24 31 54.1	9.15
32	18 12 17.78	17.185	−24 31 58.9	− 9.06	32 23 31.4	18 19 2.95	17.294	−24 34 53.6	− 5.80

VENUS, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	17 47 58.88	13.664	-23 16 23.1	-10.14	0 23 8.7	17 53 15.30	13.691	-23 19 57.9	- 8.42
1	17 53 26.99	13.678	23 20 5.0	8.35	1 23 10.3	17 58 44.03	13.702	23 22 58.4	6.62
2	17 58 55.38	13.688	23 23 3.8	6.55	2 23 11.8	18 4 12.98	13.709	23 25 15.6	4.81
3	18 4 23.99	13.695	23 25 19.4	4.75	3 23 13.3	18 9 42.11	13.714	23 26 49.4	3.01
4	18 9 52.77	13.700	23 26 51.7	2.95	4 23 14.8	18 15 11.33	13.719	23 27 39.9	- 1.20
5	18 15 21.65	13.704	23 27 40.9	- 1.14	5 23 16.4	18 20 40.61	13.720	23 27 46.7	+ 0.62
6	18 20 50.58	13.705	23 27 46.2	+ 0.68	6 23 17.9	18 26 9.87	13.718	23 27 9.8	2.45
7	18 26 19.48	13.703	23 27 8.0	2.50	7 23 19.5	18 31 39.03	13.713	23 25 49.2	4.26
8	18 31 48.29	13.698	23 25 46.3	4.31	8 23 21.0	18 37 8.06	13.706	23 23 45.0	6.08
9	18 37 16.97	13.691	23 23 41.0	6.12	9 23 22.5	18 42 36.91	13.697	23 20 57.4	7.89
10	18 42 45.46	13.682	23 20 52.4	7.93	10 23 24.0	18 48 5.50	13.685	23 17 26.1	9.71
11	18 48 13.69	13.670	23 17 20.3	9.74	11 23 25.6	18 53 33.74	13.670	23 13 11.6	11.51
12	18 53 41.58	13.655	23 13 5.0	11.54	12 23 27.1	18 59 1.60	13.653	23 8 13.9	13.30
13	18 59 9.08	13.638	23 8 6.6	13.33	13 23 28.6	19 4 29.03	13.633	23 2 33.1	15.09
14	19 4 36.16	13.618	23 2 25.2	15.11	14 23 30.1	19 9 55.96	13.611	22 56 9.7	16.86
15	19 10 2.73	13.596	22 56 1.3	16.88	15 23 31.6	19 15 22.32	13.586	22 49 3.9	18.63
16	19 15 28.74	13.571	22 48 55.1	18.64	16 23 33.1	19 20 48.05	13.558	22 41 16.0	20.37
17	19 20 54.12	13.544	22 41 6.9	20.38	17 23 34.6	19 26 13.09	13.528	22 32 46.4	22.10
18	19 26 18.82	13.514	22 32 37.0	22.11	18 23 36.0	19 31 37.40	13.497	22 23 35.2	23.83
19	19 31 42.79	13.483	22 23 25.7	23.83	19 23 37.5	19 37 0.95	13.464	22 13 42.9	25.53
20	19 37 6.00	13.450	22 13 33.3	25.53	20 23 38.9	19 42 23.67	13.429	22 3 9.9	27.22
21	19 42 28.39	13.415	22 3 0.3	27.22	21 23 40.3	19 47 45.52	13.392	21 51 56.6	28.89
22	19 47 49.91	13.378	21 51 47.1	28.88	22 23 41.7	19 53 6.45	13.352	21 40 3.6	30.53
23	19 53 10.52	13.339	21 39 54.3	30.52	23 23 43.1	19 58 26.40	13.311	21 27 31.4	32.15
24	19 58 30.15	13.298	21 27 22.4	32.14	24 23 44.5	20 3 45.37	13.269	21 14 20.6	33.74
25	20 3 48.80	13.256	21 14 11.9	33.73	25 23 45.8	20 9 3.31	13.226	21 0 31.7	35.33
26	20 9 6.43	13.213	21 0 23.4	35.31	26 23 47.2	20 14 20.18	13.180	20 46 5.3	36.88
27	20 14 23.00	13.168	20 45 57.4	36.86	27 23 48.5	20 19 35.95	13.134	20 31 1.8	38.41
28	20 19 38.47	13.122	20 30 54.4	38.39	28 23 49.8	20 24 50.60	13.087	20 15 21.8	39.91
29	20 24 52.83	13.075	20 15 15.0	39.89	29 23 51.0	20 30 4.13	13.040	19 59 6.0	41.40
30	20 30 6.07	13.028	19 58 59.8	41.37	30 23 52.3	20 35 16.51	12.991	19 42 15.0	42.85
31	20 35 18.17	12.980	19 42 9.5	42.82	31 23 53.5	20 40 27.72	12.942	19 24 49.5	44.27
Feb. 1	20 40 29.11	12.931	19 24 44.8	44.24	1 23 54.7	20 45 37.72	12.892	19 6 50.2	45.67
2	20 45 38.84	12.881	19 6 46.2	45.64	2 23 56.0	20 50 46.52	12.842	18 48 17.6	47.05
3	20 50 47.38	12.831	18 48 14.4	47.01	3 23 57.2	20 55 54.10	12.791	18 29 12.4	48.39
4	20 55 54.71	12.780	18 29 10.1	48.35	4 23 58.3	21 1 0.48	12.740	18 9 35.3	49.70
5	21 1 0.84	12.730	18 9 33.9	49.66	5 23 59.5	21 6 5.64	12.690	17 49 27.2	50.98
6	21 6 5.76	12.680	17 49 26.7	50.94					
7	21 11 9.47	12.629	17 28 49.1	52.19	7 0 0.6	21 11 9.59	12.639	17 28 48.6	52.23
8	21 16 11.96	12.578	17 7 41.8	53.41	8 0 1.7	21 16 12.31	12.588	17 7 40.3	53.45
9	21 21 13.23	12.528	16 46 5.5	54.60	9 0 2.8	21 21 13.80	12.537	16 46 3.0	54.64
10	21 26 13.29	12.477	16 24 1.0	55.77	10 0 3.8	21 26 14.08	12.486	16 23 57.5	55.81
11	21 31 12.14	12.427	16 1 28.9	56.90	11 0 4.8	21 31 13.14	12.436	16 1 24.3	56.95
12	21 36 9.80	12.378	15 38 30.1	58.00	12 0 5.9	21 36 11.01	12.387	15 38 24.4	58.05
13	21 41 6.28	12.328	15 15 5.3	59.07	13 0 6.9	21 41 7.69	12.336	15 14 58.5	59.12
14	21 46 1.57	12.279	14 51 15.2	60.10	14 0 7.8	21 46 3.18	12.287	14 51 7.3	60.15
15	21 50 55.68	12.231	14 27 0.7	61.10	15 0 8.8	21 50 57.48	12.239	14 26 51.7	61.15
16	21 55 48.64	12.183	14 2 22.5	62.07	16 0 9.8	21 55 50.62	12.191	14 2 12.4	62.12
17	22 0 40.47	12.136	13 37 21.4	63.01	17 0 10.7	22 0 42.63	12.143	13 37 10.2	63.06
18	22 5 31.18	12.090	13 11 58.2	63.92	18 0 11.6	22 5 33.51	12.097	13 11 45.9	63.97
19	22 10 20.78	12.044	12 46 13.6	64.79	19 0 12.5	22 10 23.28	12.051	12 46 0.2	64.84
20	22 15 9.30	11.999	12 20 8.4	65.63	20 0 13.3	22 15 11.96	12.006	12 19 53.8	65.68
21	22 19 56.76	11.956	11 53 43.5	66.44	21 0 14.2	22 19 59.58	11.963	11 53 27.8	66.49
22	22 24 43.20	11.914	11 26 59.5	67.22	22 0 15.0	22 24 46.18	11.920	11 26 42.7	67.27
23	22 29 28.63	11.873	10 59 57.2	67.96	23 0 15.8	22 29 31.76	11.879	10 59 39.3	68.01
24	22 34 13.09	11.833	10 32 37.5	68.68	24 0 16.6	22 34 16.36	11.839	10 32 18.5	68.73
25	22 38 56.61	11.794	10 5 1.1	69.36	25 0 17.4	22 39 0.03	11.800	10 4 41.0	69.41
26	22 43 39.20	11.756	9 37 8.7	70.01	26 0 18.2	22 43 42.76	11.762	9 36 47.5	70.06
27	22 48 20.92	11.720	9 9 1.1	70.62	27 0 18.9	22 48 24.61	11.726	9 8 38.8	70.66
28	22 53 1.79	11.686	8 40 39.4	71.20	28 0 19.7	22 53 5.62	11.692	8 40 16.1	71.24
29	22 57 41.86	11.653	- 8 12 3.8	+71.76	29 0 20.4	22 57 45.82	11.658	- 8 11 39.4	+71.80

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	22 57 41.86	11.653	− 8 12 3.8	+71.76	1 0 20.4	22 57 45.82	11.658	− 8 11 39.4	+71.80
2	23 2 21.15	11.622	7 43 15.3	72.28	2 0 21.1	23 2 25.24	11.627	7 42 49.9	72.32
3	23 6 59.71	11.592	7 14 14.6	72.77	3 0 21.8	23 7 3.92	11.597	7 13 48.2	72.81
4	23 11 37.57	11.564	6 45 2.4	73.23	4 0 22.5	23 11 41.90	11.569	6 44 35.0	73.27
5	23 16 14.78	11.538	6 15 39.5	73.67	5 0 23.2	23 16 19.23	11.543	6 15 11.1	73.71
6	23 20 51.38	11.513	5 46 6.6	74.07	6 0 23.8	23 20 55.95	11.518	5 45 37.2	74.11
7	23 25 27.41	11.490	5 16 24.4	74.44	7 0 24.5	23 25 32.10	11.495	5 15 54.0	74.48
8	23 30 2.90	11.468	4 46 33.8	74.78	8 0 25.1	23 30 7.71	11.473	4 46 2.5	74.82
9	23 34 37.89	11.448	4 16 35.4	75.08	9 0 25.8	23 34 42.81	11.453	4 16 3.1	75.12
10	23 39 12.43	11.430	3 46 30.0	75.36	10 0 26.4	23 39 17.46	11.435	3 45 56.8	75.40
11	23 43 46.57	11.414	3 16 18.3	75.61	11 0 27.0	23 43 51.71	11.419	3 15 44.2	75.65
12	23 48 20.33	11.400	2 46 0.9	75.83	12 0 27.7	23 48 25.58	11.405	2 45 25.9	75.87
13	23 52 53.76	11.387	2 15 38.6	76.02	13 0 28.3	23 52 59.13	11.392	2 15 2.8	76.06
14	23 57 26.91	11.376	1 45 12.3	76.17	14 0 28.9	23 57 32.39	11.381	1 44 35.6	76.21
15	0 1 59.83	11.367	1 14 42.7	76.29	15 0 29.5	0 2 5.42	11.372	1 14 5.2	76.32
16	0 6 32.53	11.359	0 44 10.4	76.39	16 0 30.1	0 6 38.23	11.364	0 43 32.1	76.42
17	0 11 5.06	11.353	− 0 13 36.2	76.45	17 0 30.7	0 11 10.87	11.358	− 0 12 57.1	76.48
18	0 15 37.47	11.348	+ 0 16 59.1	76.48	18 0 31.3	0 15 43.39	11.353	+ 0 17 39.0	76.51
19	0 20 9.80	11.346	0 47 34.8	76.48	19 0 31.9	0 20 15.83	11.351	0 48 15.4	76.51
20	0 24 42.08	11.345	1 18 10.1	76.45	20 0 32.5	0 24 48.22	11.350	1 18 51.5	76.48
21	0 29 14.36	11.346	1 48 44.3	76.39	21 0 33.1	0 29 20.61	11.351	1 49 26.4	76.42
22	0 33 46.68	11.348	2 19 16.6	76.30	22 0 33.7	0 33 53.05	11.353	2 19 59.4	76.33
23	0 38 19.10	11.353	2 49 46.4	76.18	23 0 34.3	0 38 25.59	11.358	2 50 29.9	76.21
24	0 42 51.63	11.359	3 20 12.8	76.02	24 0 34.9	0 42 58.23	11.364	3 20 56.9	76.05
25	0 47 24.33	11.366	3 50 35.1	75.83	25 0 35.5	0 47 31.05	11.371	3 51 19.9	75.86
26	0 51 57.22	11.375	4 20 52.6	75.62	26 0 36.1	0 52 4.06	11.380	4 21 38.1	75.65
27	0 56 30.35	11.386	4 51 4.5	75.37	27 0 36.7	0 56 37.31	11.391	4 51 50.6	75.39
28	1 1 3.77	11.399	5 21 10.2	75.10	28 0 37.3	1 1 10.86	11.404	5 21 56.9	75.12
29	1 5 37.53	11.414	5 51 8.9	74.79	29 0 37.9	1 5 44.75	11.419	5 51 56.2	74.81
30	1 10 11.66	11.431	6 20 59.9	74.45	30 0 38.6	1 10 19.01	11.436	6 21 47.7	74.47
31	1 14 46.21	11.449	6 50 42.4	74.08	31 0 39.2	1 14 53.69	11.454	6 51 30.8	74.10
Apr. 1	1 19 21.21	11.468	7 20 15.8	73.69	1 0 39.8	1 19 28.82	11.474	7 21 4.7	73.71
2	1 23 56.70	11.490	7 49 39.3	73.26	2 0 40.5	1 24 4.45	11.496	7 50 27.7	73.28
3	1 28 32.73	11.513	8 18 52.2	72.81	3 0 41.1	1 28 40.62	11.519	8 19 42.1	72.83
4	1 33 9.34	11.538	8 47 53.8	72.32	4 0 41.8	1 33 17.38	11.544	8 48 44.2	72.34
5	1 37 46.55	11.564	9 16 43.4	71.80	5 0 42.5	1 37 54.74	11.570	9 17 34.2	71.82
6	1 42 24.42	11.592	9 45 20.2	71.25	6 0 43.2	1 42 32.76	11.598	9 46 11.5	71.27
7	1 47 2.98	11.622	10 13 43.4	70.67	7 0 43.9	1 47 11.48	11.628	10 14 35.1	70.69
8	1 51 42.27	11.652	10 41 52.3	70.06	8 0 44.6	1 51 50.93	11.659	10 42 44.4	70.07
9	1 56 22.31	11.684	11 9 46.3	69.43	9 0 45.3	1 56 31.13	11.691	11 10 38.7	69.44
10	2 1 3.13	11.718	11 37 24.6	68.76	10 0 46.0	2 1 12.12	11.725	11 38 17.4	68.77
11	2 5 44.79	11.753	12 4 46.4	68.05	11 0 46.8	2 5 53.96	11.760	12 5 39.5	68.06
12	2 10 27.30	11.790	12 31 50.9	67.32	12 0 47.6	2 10 36.64	11.797	12 32 44.3	67.33
13	2 15 10.70	11.827	12 58 37.4	66.55	13 0 48.3	2 15 20.23	11.835	12 59 31.0	66.56
14	2 19 55.00	11.865	13 25 5.1	65.75	14 0 49.1	2 20 4.72	11.873	13 25 59.0	65.76
15	2 24 40.23	11.904	13 51 13.2	64.92	15 0 50.0	2 24 50.14	11.912	13 52 7.3	64.93
16	2 29 26.42	11.945	14 17 1.1	64.06	16 0 50.8	2 29 36.53	11.953	14 17 55.3	64.06
17	2 34 13.59	11.986	14 42 28.0	63.17	17 0 51.6	2 34 23.90	11.995	14 43 22.3	63.17
18	2 39 1.75	12.028	15 7 33.0	62.24	18 0 52.5	2 39 12.27	12.037	15 8 27.4	62.24
19	2 43 50.92	12.070	15 32 15.4	61.28	19 0 53.4	2 44 1.66	12.079	15 33 9.9	61.28
20	2 48 41.12	12.114	15 56 34.5	60.30	20 0 54.3	2 48 52.08	12.123	15 57 29.0	60.30
21	2 53 32.37	12.157	16 20 29.4	59.27	21 0 55.2	2 53 43.55	12.166	16 21 23.9	59.27
22	2 58 24.66	12.202	16 43 59.4	58.22	22 0 56.1	2 58 36.07	12.212	16 44 53.8	58.22
23	3 3 18.04	12.247	17 7 3.9	57.14	23 0 57.1	3 3 29.69	12.257	17 7 58.2	57.14
24	3 8 12.51	12.292	17 29 42.1	56.03	24 0 58.0	3 8 24.40	12.302	17 30 36.3	56.02
25	3 13 8.07	12.338	17 51 53.2	54.89	25 0 59.0	3 13 20.20	12.348	17 52 47.2	54.88
26	3 18 4.72	12.383	18 13 36.5	53.71	26 1 0.0	3 18 17.00	12.394	18 14 30.2	53.70
27	3 23 2.46	12.428	18 34 51.2	52.51	27 1 1.0	3 23 15.10	12.439	18 35 44.6	52.50
28	3 28 1.29	12.474	18 55 36.7	51.28	28 1 2.1	3 28 14.19	12.485	18 56 29.7	51.26
29	3 33 1.22	12.520	19 15 52.2	50.02	29 1 3.1	3 33 14.39	12.531	19 16 44.8	50.00
30	3 38 2.24	12.566	19 35 37.2	48.73	30 1 4.2	3 38 15.68	12.577	19 36 29.3	48.71
31	3 43 4.38	12.612	+19 54 50.8	+47.40	31 1 5.3	3 43 18.10	12.624	+19 55 42.4	+47.38

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	3 43 4.38	12.612	+19 54 50.8	+47.40	1 1 5.3	3 43 18.10	12.624	+19 55 42.4	+47.38
2	3 48 7.60	12.657	20 13 32.4	46.06	2 1 6.4	3 48 21.61	12.669	20 14 23.4	46.03
3	3 53 11.91	12.702	20 31 41.4	44.69	3 1 7.5	3 53 26.21	12.714	20 32 31.7	44.66
4	3 58 17.27	12.746	20 49 17.3	43.29	4 1 8.7	3 58 31.87	12.758	20 50 6.9	43.26
5	4 3 23.71	12.790	21 6 19.2	41.86	5 1 9.9	4 3 38.61	12.802	21 7 7.9	41.82
6	4 8 31.18	12.833	21 22 46.5	40.41	6 1 11.1	4 8 46.38	12.845	21 23 34.3	40.37
7	4 13 39.68	12.875	21 38 38.7	38.94	7 1 12.3	4 13 55.18	12.888	21 39 25.6	38.90
8	4 18 49.17	12.916	21 53 55.2	37.43	8 1 13.5	4 19 4.98	12.929	21 54 41.0	37.38
9	4 23 59.65	12.957	22 8 35.3	35.90	9 1 14.7	4 24 15.78	12.970	22 9 19.9	35.85
10	4 29 11.07	12.995	22 22 38.3	34.35	10 1 16.0	4 29 27.52	13.008	22 23 21.7	34.30
11	4 34 23.41	13.033	22 36 3.9	32.78	11 1 17.2	4 34 40.18	13.046	22 36 46.0	32.72
12	4 39 36.63	13.069	22 48 51.5	31.18	12 1 18.5	4 39 53.73	13.083	22 49 32.2	31.12
13	4 44 50.70	13.104	23 1 0.5	29.57	13 1 19.8	4 45 8.13	13.118	23 1 39.7	29.51
14	4 50 5.59	13.136	23 12 30.5	27.93	14 1 21.1	4 50 23.35	13.150	23 13 8.2	27.86
15	4 55 21.21	13.166	23 23 21.0	26.28	15 1 22.4	4 55 39.30	13.180	23 23 57.6	26.21
16	5 0 37.56	13.195	23 33 31.5	24.60	16 1 23.8	5 0 55.98	13.209	23 34 5.7	24.53
17	5 5 54.57	13.222	23 43 1.6	22.91	17 1 25.1	5 6 13.32	13.236	23 43 34.0	22.83
18	5 11 12.20	13.247	23 51 51.0	21.20	18 1 26.4	5 11 31.28	13.261	23 52 21.4	21.12
19	5 16 30.39	13.269	23 59 59.0	19.47	19 1 27.8	5 16 49.80	13.283	24 0 27.4	19.38
20	5 21 49.11	13.290	24 7 25.5	17.73	20 1 29.2	5 22 8.86	13.304	24 7 51.7	17.64
21	5 27 8.24	13.307	24 14 10.0	15.98	21 1 30.6	5 27 28.32	13.321	24 14 34.0	15.89
22	5 32 27.80	13.322	24 20 12.5	14.22	22 1 31.9	5 32 48.21	13.336	24 20 34.2	14.12
23	5 37 47.67	13.334	24 25 32.6	12.45	23 1 33.3	5 38 8.41	13.348	24 25 51.9	12.35
24	5 43 7.82	13.345	24 30 10.0	10.67	24 1 34.7	5 43 28.88	13.359	24 30 26.7	10.57
25	5 48 28.19	13.352	24 34 4.7	8.89	25 1 36.1	5 48 49.58	13.366	24 34 18.8	8.78
26	5 53 48.71	13.357	24 37 16.6	7.10	26 1 37.5	5 54 10.42	13.370	24 37 27.0	6.99
27	5 59 9.32	13.360	24 39 45.3	5.30	27 1 38.9	5 59 31.35	13.373	24 39 53.9	5.18
28	6 4 29.96	13.360	24 41 30.9	3.50	28 1 40.3	6 4 52.29	13.373	24 41 36.6	3.38
29	6 9 50.56	13.358	24 42 33.2	+ 1.69	29 1 41.7	6 10 13.20	13.371	24 42 36.0	+ 1.57
30	6 15 11.07	13.352	24 42 52.2	− 0.11	30 1 43.1	6 15 34.01	13.365	24 42 51.9	− 0.24
31	6 20 31.43	13.344	24 42 28.0	1.91	31 1 44.5	6 20 54 68	13.356	24 42 24.6	2.04
June 1	6 25 51.56	13.333	24 41 20.6	3.71	1 1 45.9	6 26 15.09	13.345	24 41 14.0	3.85
2	6 31 11.41	13.321	24 39 30.1	5.50	2 1 47.3	6 31 35.22	13.333	24 39 20.2	5.64
3	6 36 30.93	13.306	24 36 56.5	7.29	3 1 48 7	6 36 55.03	13.318	24 36 43.2	7.43
4	6 41 50.06	13.288	24 33 40.0	9.08	4 1 50.1	6 42 14.44	13.299	24 33 23.3	9.22
5	6 47 8.72	13.267	24 29 40.7	10.86	5 1 51.4	6 47 33.36	13.278	24 29 20.5	11.01
6	6 52 26.86	13.245	24 24 58.7	12.63	6 1 52.8	6 52 51.76	13.255	24 24 34.9	12.78
7	6 57 44.44	13.220	24 19 34.4	14.39	7 1 54.1	6 58 9.58	13.230	24 19 6.9	14.54
8	7 3 1.39	13.192	24 13 28.0	16.14	8 1 55.5	7 3 26.78	13.202	24 12 56.8	16.29
9	7 8 17.64	13.162	24 6 39.7	17.88	9 1 56.8	7 8 43.26	13.172	24 6 4.8	18.04
10	7 13 33.15	13.130	23 59 9.9	19.61	10 1 58.1	7 13 59.00	13.139	23 58 31.2	19.77
11	7 18 47.86	13.096	23 50 58.9	21.32	11 1 59.4	7 19 13.93	13.105	23 50 16.4	21.48
12	7 24 1.72	13.059	23 42 6.9	23.01	12 2 0.7	7 24 27.99	13.067	23 41 20.5	23.17
13	7 29 14.68	13.021	23 32 34.4	24.69	13 2 2.0	7 29 41.15	13.029	23 31 44.1	24.85
14	7 34 26.69	12.980	23 22 21.7	26.36	14 2 3.3	7 34 53.35	12.988	23 21 27.5	26.52
15	7 39 37.70	12.938	23 11 29.4	28.00	15 2 4.5	7 40 4.54	12.945	23 10 31.2	28.16
16	7 44 47.67	12.893	22 59 57.9	29.62	16 2 5.7	7 45 14.69	12.900	22 58 55.7	29.78
17	7 49 56.54	12.847	22 47 47.7	31.22	17 2 6.9	7 50 23.72	12.853	22 46 41.6	31.38
18	7 55 4.31	12.799	22 34 59.5	32.80	18 2 8.1	7 55 31.64	12.805	22 33 49.4	32.96
19	8 0 10.87	12.748	22 21 33.3	34.36	19 2 9.3	8 0 38.34	12.754	22 20 19.2	34.52
20	8 5 16.22	12.697	22 7 30.0	35.90	20 2 10.4	8 5 43.81	12.702	22 6 11.9	36.06
21	8 10 20.33	12.645	21 52 50.1	37.41	21 2 11.6	8 10 48.04	12.650	21 51 28.0	37.57
22	8 15 23.17	12.592	21 37 34.5	38.89	22 2 12.7	8 15 51.00	12.597	21 36 8.5	39.05
23	8 20 24.71	12.536	21 21 43.5	40.35	23 2 13.7	8 20 52.64	12.540	21 20 13.5	40.51
24	8 25 24.92	12.481	21 5 17.8	41.79	24 2 14.8	8 25 52.95	12.485	21 3 43.9	41 95
25	8 30 23.78	12.424	20 48 17.9	43.20	25 2 15.8	8 30 51.90	12.428	20 46 40.0	43.36
26	8 35 21.28	12.367	20 30 44.5	44.58	26 2 16.9	8 35 49.48	12.370	20 29 2.7	44.74
27	8 40 17.40	12.309	20 12 38.4	45.93	27 2 17.9	8 40 45.67	12.312	20 10 52.8	46.09
28	8 45 12.11	12.250	19 54 0.2	47.25	28 2 18.8	8 45 40.44	12.252	19 52 10.8	47.41
29	8 50 5.42	12.192	19 34 50.4	48.55	29 2 19.8	8 50 33.81	12.194	19 32 57.2	48.71
30	8 54 57.31	12.133	19 15 9.9	49.82	30 2 20.7	8 55 25.75	12.135	19 13 13.0	49.97
31	8 59 47.79	12.074	+18 54 59.1	−51.06	31 2 21.6	9 0 16.27	12.076	+18 52 58.5	−51.21

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	8 59 47.79	12.074	+18 54 59.1	-51.06	1 2 21.6	9 0 16.27	12.076	+18 52 58.5	-51.21
2	9 4 36.85	12.015	18 34 19.1	52.28	2 2 22.5	9 5 5.37	12.016	18 32 14.9	52.43
3	9 9 24.49	11.955	18 13 10.1	53.46	3 2 23.3	9 9 53.03	11.956	18 11 2.3	53.61
4	9 14 10.71	11.896	17 51 33.1	54.62	4 2 24.1	9 14 39.27	11.897	17 49 21.8	54.76
5	9 18 55.53	11.838	17 29 28.7	55.74	5 2 24.9	9 19 24.11	11.839	17 27 14.0	55.88
6	9 23 38.95	11.780	17 6 57.6	56.84	6 2 25.7	9 24 7.54	11.781	17 4 39.5	56.98
7	9 28 20.97	11.722	16 44 0.5	57.91	7 2 26.5	9 28 49.57	11.722	16 41 39.1	58.05
8	9 33 1.59	11.664	16 20 38.0	58.95	8 2 27.2	9 33 30.19	11.664	16 18 13.3	59.08
9	9 37 40.84	11.607	15 56 50.9	59.96	9 2 27.9	9 38 9.44	11.607	15 54 33.0	60.09
10	9 42 18.72	11.550	15 32 40.0	60.94	10 2 28.6	9 42 47.31	11.550	15 30 9.0	61.07
11	9 46 55.24	11.494	15 8 5.9	61.89	11 2 29.3	9 47 23.82	11.494	15 5 31.9	62.01
12	9 51 30.43	11.439	14 43 9.3	62.82	12 2 29.9	9 51 59.00	11.439	14 40 32.3	62.94
13	9 56 4.30	11.384	14 17 51.0	63.71	13 2 30.6	9 56 32.84	11.383	14 15 11.1	63.83
14	10 0 36.85	11.329	13 52 11.6	64.57	14 2 31.2	10 1 5.37	11.328	13 49 28.9	64.68
15	10 5 8.11	11.276	13 26 12.0	65.40	15 2 31.7	10 5 36.61	11.275	13 23 26.6	65.51
16	10 9 38.09	11.223	12 59 52.8	66.20	16 2 32.3	10 10 6.55	11.222	12 57 4.7	66.31
17	10 14 6.83	11.171	12 33 14.8	66.97	17 2 32.8	10 14 35.26	11.170	12 30 24.2	67.07
18	10 18 34.32	11.120	12 6 18.6	67.71	18 2 33.3	10 19 2.72	11.119	12 3 25.5	67.81
19	10 23 0.61	11.070	11 39 5.0	68.42	19 2 33.8	10 23 28.97	11.069	11 36 9.5	68.52
20	10 27 25.67	11.020	11 11 34.8	69.09	20 2 34.3	10 27 53.98	11.018	11 8 37.1	69.18
21	10 31 49.58	10.972	10 43 48.8	69.74	21 2 34.8	10 32 17.85	10.970	10 40 49.0	69.83
22	10 36 12.35	10.925	10 15 47.5	70.36	22 2 35.2	10 36 40.58	10.923	10 12 45.5	70.45
23	10 40 33.99	10.879	9 47 31.8	70.95	23 2 35.6	10 41 2.17	10.877	9 44 27.8	71.05
24	10 44 54.54	10.834	9 19 2.0	71.51	24 2 36.0	10 45 22.68	10.832	9 15 56.1	71.59
25	10 49 14.02	10.790	8 50 19.4	72.04	25 2 36.4	10 49 42.12	10.788	8 47 11.7	72.11
26	10 53 32.46	10.747	8 21 24.4	72.54	26 2 36.7	10 54 0.51	10.745	8 18 14.9	72.61
27	10 57 49.89	10.706	7 52 17.6	73.02	27 2 37.0	10 58 17.90	10.704	7 49 6.4	73.09
28	11 2 6.35	10.666	7 22 59.7	73.47	28 2 37.4	11 2 34.32	10.664	7 19 46.9	73.53
29	11 6 21.88	10.628	6 53 31.5	73.88	29 2 37.7	11 6 49.81	10.626	6 50 17.2	73.94
30	11 10 36.49	10.590	6 23 53.6	74.27	30 2 38.0	11 11 4.37	10.588	6 20 38.0	74.33
31	11 14 50.22	10.554	5 54 6.6	76.64	31 2 38.3	11 15 18.05	10.552	5 50 49.7	74.69
Aug. 1	11 19 3.11	10.520	5 24 11.3	74.97	1 2 38.6	11 19 30.90	10.518	5 20 53.2	75.02
2	11 23 15.20	10.487	4 54 8.2	75.28	2 2 38.8	11 23 42.96	10.485	4 50 49.0	75.33
3	11 27 26.51	10.456	4 23 58.0	75.57	3 2 39.1	11 27 54.22	10.454	4 20 37.7	75.62
4	11 31 37.09	10.426	3 53 41.2	75.83	4 2 39.3	11 32 4.77	10.424	3 50 19.9	75.87
5	11 35 46.96	10.397	3 23 18.6	76.06	5 2 39.5	11 36 14.60	10.395	3 19 56.4	76.10
6	11 39 56.16	10.370	2 52 50.9	76.26	6 2 39.7	11 40 23.76	10.368	2 49 27.9	76.29
7	11 44 4.74	10.345	2 22 18.4	76.44	7 2 39.9	11 44 32.30	10.344	2 18 54.7	76.47
8	11 48 12.72	10.321	1 51 41.9	76.59	8 2 40.1	11 48 40.25	10.320	1 48 17.6	76.62
9	11 52 20.14	10.298	1 21 2.1	76.72	9 2 40.3	11 52 47.65	10.297	1 17 37.2	76.74
10	11 56 27.01	10.276	0 50 19.5	76.82	10 2 40.4	11 56 54.48	10.275	0 46 54.2	76.84
11	12 0 33.37	10.255	+ 0 19 34.9	76.89	11 2 40.6	12 1 0.81	10.254	+ 0 16 9.1	76.91
12	12 4 39.25	10.235	− 0 11 11.0	76.93	12 2 40.7	12 5 6.67	10.234	− 0 14 37.1	76.94
13	12 8 44.67	10.217	0 41 57.6	76.95	13 2 40.9	12 9 12.07	10.216	0 45 24.0	76.96
14	12 12 49.68	10.200	1 12 44.3	76.95	14 2 41.0	12 13 17.05	10.199	1 16 10.8	76.95
15	12 16 54.30	10.185	1 43 30.5	76.92	15 2 41.2	12 17 21.65	10.184	1 46 57.0	76.92
16	12 20 58.55	10.170	2 14 15.6	76.85	16 2 41.3	12 21 25.88	10.169	2 17 42.1	76.85
17	12 25 2.45	10.156	2 44 58.9	76.75	17 2 41.4	12 25 29.77	10.155	2 48 25.5	76.75
18	12 29 6.03	10.143	3 15 39.5	76.63	18 2 41.5	12 29 33.33	10.142	3 19 5.8	76.62
19	12 33 9.33	10.132	3 46 17.0	76.48	19 2 41.6	12 33 36.62	10.131	3 49 43.0	76.47
20	12 37 12.35	10.121	4 16 50.6	76.31	20 2 41.8	12 37 39.62	10.121	4 20 16.2	76.29
21	12 41 15.13	10.111	4 47 19.7	76.11	21 2 41.9	12 41 42.40	10.111	4 50 44.9	76.09
22	12 45 17.69	10.102	5 17 43.7	75.88	22 2 42.0	12 45 44.95	10.102	5 21 8.4	75.86
23	12 49 20.05	10.095	5 48 2.0	75.63	23 2 42.1	12 49 47.31	10.095	5 51 26.2	75.61
24	12 53 22.24	10.088	6 18 13.9	75.35	24 2 42.2	12 53 49.50	10.088	6 21 37.5	75.33
25	12 57 24.28	10.082	6 48 18.8	75.05	25 2 42.2	12 57 51.55	10.082	6 51 41.8	75.02
26	13 1 26.18	10.077	7 18 16.1	74.72	26 2 42.3	13 1 53.45	10.077	7 21 38.3	74.69
27	13 5 27.97	10.073	7 48 5.2	74.37	27 2 42.4	13 5 55.24	10.073	7 51 26.5	74.33
28	13 9 29.67	10.069	8 17 45.5	73.99	28 2 42.5	13 9 56.94	10.069	8 21 5.8	73.95
29	13 13 31.31	10.067	8 47 16.3	73.58	29 2 42.6	13 13 58.59	10.067	8 50 35.6	73.54
30	13 17 32.90	10.066	9 16 37.0	73.15	30 2 42.7	13 18 0.19	10.067	9 19 55.2	73.10
31	13 21 34.47	10.066	− 9 45 47.1	-72.69	31 2 42.8	13 22 1.78	10.067	− 9 49 4.2	-72.64

VENUS, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	13 25 36.05	10.066	-10 14 46.1	-72.22	1 2 42.8	13 26 3.37	10.067	-10 18 2.0	-72.17
2	13 29 37.64	10.067	10 43 33.5	71.72	2 2 42.9	13 30 4.97	10.068	10 46 48.2	71.67
3	13 33 39.26	10.068	11 12 8.7	71.20	3 2 43.0	13 34 6.61	10.069	11 15 22.1	71.14
4	13 37 40.92	10.070	11 40 30.9	70.65	4 2 43.1	13 38 8.29	10.071	11 43 42.9	70.59
5	13 41 42 63	10.073	12 8 39.5	70.07	5 2 43.2	13 42 10.03	10.074	12 11 50.0	70.01
6	13 45 44.41	10.075	12 36 33.9	69.47	6 2 43.3	13 46 11.84	10.076	12 39 42.9	69.41
7	13 49 46.25	10.078	13 4 13.7	68.84	7 2 43.4	13 50 13.70	10.079	13 7 21.2	68.78
8	13 53 48.17	10.082	13 31 38.1	68.19	8 2 43.4	13 54 15.64	10.083	13 34 44.0	68.12
9	13 57 50.17	10.086	13 58 46.8	67.52	9 2 43.5	13 58 17.66	10.087	14 1 51.0	67.45
10	14 1 52.24	10.088	14 25 38.9	66.82	10 2 43.6	14 2 19.75	10.089	14 28 41.2	66.74
11	14 5 54.38	10.090	14 52 14.0	66.10	11 2 43.7	14 6 21.91	10.091	14 55 14.4	66.02
12	14 9 56.58	10.093	15 18 31.4	65.35	12 2 43.8	14 10 24.13	10.094	15 21 29.8	65.27
13	14 13 58.83	10.095	15 44 30.5	64.57	13 2 43.9	14 14 26.40	10.096	15 47 26.9	64.48
14	14 18 1.12	10.096	16 10 10.5	63.76	14 2 44.0	14 18 28.71	10.097	16 13 4.8	63.67
15	14 22 3.43	10.096	16 35 31.0	62.94	15 2 44.1	14 22 31.04	10.097	16 38 23.1	62.85
16	14 26 5.74	10.096	17 0 31.3	62.08	16 2 44.2	14 26 33.36	10.096	17 3 21.1	61.98
17	14 30 8.02	10.094	17 25 10.8	61.21	17 2 44.3	14 30 35.66	10.094	17 27 58.3	61.11
18	14 34 10.28	10.092	17 49 29.0	60.31	18 2 44.4	14 34 37.92	10.092	17 52 14.2	60.21
19	14 38 12.40	10.088	18 13 25.3	59.38	19 2 44.5	14 38 40.04	10.088	18 16 8.0	59.28
20	14 42 14.44	10.082	18 36 59.1	58.43	20 2 44.6	14 42 42.08	10.082	18 39 39.3	58.32
21	14 46 16.32	10.075	19 0 9.9	57.46	21 2 44.7	14 46 43.96	10.075	19 2 47.6	57.35
22	14 50 18.01	10.066	19 22 57.0	56.46	22 2 44.7	14 50 45.64	10.066	19 25 32.0	56.35
23	14 54 19.48	10.056	19 45 20.0	55.45	23 2 44.8	14 54 47.10	10.055	19 47 52.3	55.33
24	14 58 20.68	10.044	20 7 18.3	54.41	24 2 44.9	14 58 48.28	10.043	20 9 47.8	54.29
25	15 2 21.56	10.030	20 28 51.5	53.35	25 2 45.0	15 2 49.13	10.029	20 31 18.2	53.23
26	15 6 22.08	10.014	20 49 59.1	52.28	26 2 45.0	15 6 49.61	10.013	20 52 22.8	52.16
27	15 10 22.19	9.995	21 10 40.5	51.18	27 2 45.1	15 10 49.69	9.993	21 13 1.3	51.05
28	15 14 21.84	9.974	21 30 55.5	50.07	28 2 45.1	15 14 49.29	9.972	21 33 13.3	49.94
29	15 18 20.95	9.951	21 50 43.5	48.93	29 2 45.2	15 18 48.35	9.949	21 52 58.2	48.80
30	15 22 19.48	9.926	22 10 4.2	47.78	30 2 45.2	15 22 46.81	9.923	22 12 15.7	47.65
Oct. 1	15 26 17.36	9.897	22 28 57.1	46.62	1 2 45.2	15 26 44.61	9.894	22 31 5.4	46.49
2	15 30 14.52	9.866	22 47 21.8	45.44	2 2 45.3	15 30 41.68	9.862	22 49 26.9	45.30
3	15 34 10.88	9.831	23 5 18.0	44.24	3 2 45.3	15 34 37.95	9.827	23 7 19.8	44.10
4	15 38 6.37	9.792	23 22 45.3	43.03	4 2 45.2	15 38 33.33	9.787	23 24 43.8	42.89
5	15 42 0.89	9.750	23 39 43.5	41.81	5 2 45.2	15 42 27.72	9.745	23 41 38.6	41.67
6	15 45 54.36	9.704	23 56 12.1	40.57	6 2 45.2	15 46 21.06	9.698	23 58 3.8	40.43
7	15 49 46.67	9.654	24 12 10.7	39.32	7 2 45.1	15 50 13.22	9.647	24 13 58.8	39.17
8	15 53 37.71	9.599	24 27 39.3	38.06	8 2 45.0	15 54 4.09	9.592	24 29 23.9	37.91
9	15 57 27.39	9.539	24 42 37.3	36.78	9 2 44.9	15 57 53.59	9.531	24 44 18.3	36.63
10	16 1 15.56	9.474	24 57 4.5	35.49	10 2 44.7	16 1 41.55	9.465	24 58 41.9	35.34
11	16 5 2.11	9.404	25 11 0.7	34.19	11 2 44.6	16 5 27.88	9.394	25 12 34.4	34.04
12	16 8 46.89	9.328	25 24 25.5	32.88	12 2 44.4	16 9 12:42	9.318	25 25 55.5	32.73
13	16 12 29.78	9.245	25 37 18.8	31.56	13 2 44.2	16 12 55.04	9.234	25 38 45.1	31.41
14	16 16 10.60	9.155	25 49 40.5	30.24	14 2 43.9	16 16 35.57	9.143	25 51 3.1	30.08
15	16 19 49.19	9.059	26 1 30.1	28.90	15 2 43.6	16 20 13.86	9.046	26 2 48.9	28.74
16	16 23 25.39	8.956	26 12 47.5	27.55	16 2 43.2	16 23 49.73	8.942	26 14 2.5	27.39
17	16 26 59.04	8.846	26 23 32.7	26.21	17 2 42.9	16 27 23.02	8.830	26 24 43.8	26.05
18	16 30 29.94	8.728	26 33 45.5	24.86	18 2 42.4	16 30 53.53	8.711	26 34 52.8	24.70
19	16 33 57.91	8.602	26 43 25.9	23.51	19 2 42.0	16 34 21.09	8.584	26 44 29.3	23.35
20	16 37 22.75	8.468	26 52 33.8	22.15	20 2 41.4	16 37 45.50	8 449	26 53 33.4	21.99
21	16 40 44.28	8.326	27 1 9.1	20.79	21 2 40.8	16 41 6.57	8.306	27 2 4.8	20.63
22	16 44 2.32	8.175	27 9 11.8	19.43	22 2 40.2	16 44 24.12	8.154	27 10 3.7	19.27
23	16 47 16.62	8.015	27 16 41.8	18.07	23 2 39.5	16 47 37.89	7.993	27 17 29.8	17.91
24	16 50 26.96	7.846	27 23 39.2	16.71	24 2 38.7	16 50 47.69	7.822	27 24 23.4	16.55
25	16 53 33.16	7.668	27 30 4.0	15.36	25 2 37.8	16 53 53.29	7.643	27 30 44.4	15.20
26	16 56 34.96	7.480	27 35 56.3	14.00	26 2 36.9	16 56 54.48	7.454	27 36 32.9	13.84
27	16 59 32.13	7.283	27 41 16.2	12.65	27 2 35.9	16 59 51.02	7.256	27 41 49.1	12.50
28	17 2 24.45	7.076	27 46 3 6	11.30	28 2 34.8	17 2 42.68	7.048	27 46 32.8	11.15
29	17 5 11.69	6.859	27 50 18.6	9.95	29 2 33.6	17 5 29.22	6.829	27 50 44.1	9.80
30	17 7 53.58	6.631	27 54 1.4	8.61	30 2 32.4	17 8 10.39	6.600	27 54 23.3	8.46
31	17 10 29.87	6.392	27 57 11.9	7.27	31 2 31.0	17 10 45.93	6.360	27 57 30.2	7.12
32	17 13 0.28	+6.141	-27 59 50.3	- 5.93	32 2 29.6	17 13 15.56	+6.108	-28 0 5.1	- 5.78

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	17 13 0.28	+6.141	-27 59 50.3	- 5.93	1 2 29.6	17 13 15.56	+6.108	-28 0 5.1	- 5.78
2	17 15 24.53	5.879	28 1 56.5	4.59	2 2 28.0	17 15 39.00	5.845	28 2 7.8	4.45
3	17 17 42.37	5.606	28 3 30.7	3.25	3 2 26.4	17 17 56.01	5.571	28 3 38.6	3.11
4	17 19 53.51	5.321	28 4 32.7	1.91	4 2 24.6	17 20 6.29	5.285	28 4 37.3	1.77
5	17 21 57.68	5.024	28 5 2.4	- 0.56	5 2 22.7	17 22 9.59	4.987	28 5 3.7	- 0.42
6	17 23 54.57	4.714	28 4 59.7	+ 0.79	6 2 20.7	17 24 5.59	4.677	28 4 57.8	+ 0.92
7	17 25 43.87	4.392	28 4 24.6	2.15	7 2 18.6	17 25 53.98	4.354	28 4 19.6	2.28
8	17 27 25.26	4.056	28 3 16.8	3.51	8 2 16.4	17 27 34.43	4.017	28 3 8.8	3.63
9	17 28 58.46	3.708	28 1 36.2	4.88	9 2 14.0	17 29 6.71	3.669	28 1 25.3	5.00
10	17 30 23.13	3.346	27 59 22.5	6.26	10 2 11.4	17 30 30.43	3.306	27 59 8.8	6.37
11	17 31 38.99	2.972	27 56 35.3	7.66	11 2 8.7	17 31 45.34	2.932	27 56 19.1	7.77
12	17 32 45.71	2.585	27 53 14.5	9.09	12 2 5.9	17 32 51.10	2.545	27 52 55.4	9.19
13	17 33 42.99	2.186	27 49 19.0	10.53	13 2 2.9	17 33 47.44	2.147	27 48 57.4	10.63
14	17 34 30.54	1.775	27 44 48.7	11.99	14 1 59.8	17 34 34.05	1.736	27 44 24.8	12.08
15	17 35 8.12	1.354	27 39 43.1	13.48	15 1 56.5	17 35 10.71	1.316	27 39 17.0	13.57
16	17 35 35.46	0.923	27 34 1.5	14.99	16 1 53.0	17 35 37.17	0.887	27 33 33.3	15.07
17	17 35 52.35	0.483	27 27 43.2	16.53	17 1 49.3	17 35 53.20	0.448	27 27 13.1	16.61
18	17 35 58.59	+0.037	27 20 47.5	18.12	18 1 45.4	17 35 58.64	+0.004	27 20 15.7	18.19
19	17 35 54.08	-0.414	27 13 13.4	19.73	19 1 41.4	17 35 53.36	-0.445	27 12 40.1	19.79
20	17 35 38.68	0.869	27 5 0.3	21.37	20 1 37.2	17 35 37.25	0.897	27 4 25.7	21.42
21	17 35 12.35	1.325	26 56 7.4	23.05	21 1 32.8	17 35 10.28	1.350	26 55 31.8	23.09
22	17 34 35.08	1.780	26 46 33.8	24.75	22 1 28.2	17 34 32.44	1.802	26 45 57.4	24.78
23	17 33 46.93	2.231	26 36 19.1	26.48	23 1 23.5	17 33 43.80	2.249	26 35 42.2	26.49
24	17 32 48.07	2.673	26 25 22.7	28.23	24 1 18.6	17 32 44.56	2.687	26 24 45.7	28.23
25	17 31 38.73	3.104	26 13 44.2	29.99	25 1 13.5	17 31 34.92	3.114	26 13 7.4	29.97
26	17 30 19.19	3.522	26 1 23.4	31.75	26 1 8.2	17 30 15.18	3.528	26 0 47.3	31.71
27	17 28 49.82	3.922	25 48 20.2	33.51	27 1 2.8	17 28 45.71	3.924	25 47 45.1	33.46
28	17 27 11.09	4.302	25 34 35.2	35.25	28 0 57.3	17 27 6.99	4.300	25 34 1.6	35.18
29	17 25 23.53	4.657	25 20 9.0	36.95	29 0 51.5	17 25 19.53	4.651	25 19 37.3	36.86
30	17 23 27.78	4.984	25 5 2.4	38.60	30 0 45.7	17 23 23.99	4.974	25 4 33.0	38.49
Dec. 1	17 21 24.54	5.280	24 49 17.1	40.17	1 0 39.7	17 21 21.05	5.266	24 48 50.5	40.04
2	17 19 14.59	5.543	24 32 55.1	41.65	2 0 33.6	17 19 11.48	5.525	24 32 31.8	41.51
3	17 16 58.77	5.768	24 15 59.0	43.03	3 0 27.4	17 16 56.13	5.747	24 15 39.3	42.87
4	17 14 38.03	5.954	23 58 31.1	44.28	4 0 21.2	17 14 35.93	5.930	23 58 15.5	44.10
5	17 12 13.32	6.098	23 40 35.0	45.37	5 0 14.8	17 12 11.81	6.072	23 40 23.8	45.18
6	17 9 45.65	6.201	23 22 14.9	46.29	6 0 8.5	17 9 44.78	6.174	23 22 8.2	46.09
7	17 7 16.01	6.260	23 3 34.8	47.02	7 0 2.1	17 7 15.80	6.232	23 3 33.2	46.81
					7 23 55.5	17 4 45.96	6.247	22 44 43.3	47.33
8	17 4 45.50	6.275	22 44 39.8	47.54	8 23 49.2	17 2 16.27	6.219	22 25 43.4	47.63
9	17 2 15.15	6.246	22 25 34.8	47.84	9 23 42.8	16 59 47.82	6.147	22 6 39.0	47.70
10	16 59 46.05	6.173	22 6 25.3	47.91	10 23 36.4	16 57 21.59	6.034	21 47 35.6	47.54
11	16 57 19.19	6.058	21 47 17.0	47.74	11 23 30.1	16 54 58.54	5.881	21 28 38.9	47.14
12	16 54 55.60	5.903	21 28 15.5	47.34	12 23 23.9	16 52 39.69	5.691	21 9 54.5	46.51
13	16 52 36.17	5.710	21 9 26.5	46.70	13 23 17.8	16 50 25.69	5.464	20 51 28.0	45.65
14	16 50 21.83	5.480	20 50 55.7	45.82	14 23 11.7	16 48 17.61	5.205	20 33 24.8	44.58
15	16 48 13.40	5.217	20 32 48.8	44.72	15 23 5.7	16 46 16.12	4.915	20 15 49.6	43.30
16	16 46 11.66	4.924	20 15 10.4	43.42	16 22 59.9	16 44 21.91	4.598	19 58 47.6	41.82
17	16 44 17.29	4.603	19 58 5.6	41.92	17 22 54.2	16 42 35.58	4.258	19 42 23.3	40.16
18	16 42 30.90	4.258	19 41 39.1	40.24	18 22 48.7	16 40 57.69	3.898	19 26 40.9	38.34
19	16 40 53.04	3.894	19 25 55.1	38.39	19 22 43.2	16 39 28.66	3.519	19 11 43.7	36.40
20	16 39 24.15	3.511	19 10 57.1	36.42	20 22 38.0	16 38 8.90	3.126	18 57 34.5	34.34
21	16 38 4.62	3.115	18 56 47.6	34.34	21 22 32.9	16 36 58.69	2.723	18 44 16.0	32.17
22	16 36 54.73	2.708	18 43 29.3	32.15	22 22 28.0	16 35 58.27	2.311	18 31 50.5	29.94
23	16 35 54.73	2.292	18 31 4.6	29.89	23 22 23.2	16 35 7.80	1.894	18 20 19.2	27.65
24	16 35 4.76	1.872	18 19 34.7	27.58	24 22 18.6	16 34 27.38	1.475	18 9 43.1	25.35
25	16 34 24.90	1.450	18 9 0.4	25.26	25 22 14.2	16 33 57.02	1.055	18 0 2.4	23.03
26	16 33 55.18	1.027	17 59 22.0	22.93	26 22 9.9	16 33 36.74	0.636	17 57 17.4	20.72
27	16 33 35.60	0.606	17 50 39.6	20.60	27 22 5.8	16 33 26.47	-0.229	17 43 27.7	18.42
28	16 33 26.08	-0.188	17 42 52.9	18.29	28 22 1.8	16 33 26.11	+0.190	17 36 32.9	16.16
29	16 33 26.52	+0.224	17 36 1.4	16.02	29 21 58.0	16 33 35.51	0.593	17 30 31.7	13.95
30	16 33 36.76	0.629	17 30 3.7	13.80	30 21 54.4	16 33 54.56	0.990	17 25 22.7	11.80
31	16 33 56.67	1.027	17 24 58.3	11.65	31 21 51.0	16 34 23.01	1.379	17 21 4.5	9.72
32	16 34 26.02	+1.417	-17 20 43.9	+ 9.56	32 21 47.8	16 35 0.70	+1.760	-17 17 35.5	+ 7.71

MARS, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	22 8 34.24	+7.356	−12 33 49.8	+42.65	0 3 27.7	22 8 59.70	+7.349	−12 31 22.1	+42.66
1	22 11 30.59	7.339	12 16 43.0	42.92	1 3 26.7	22 11 55.86	7.332	12 14 15.1	42.93
2	22 14 26.53	7.322	11 59 29.8	43.18	2 3 25.6	22 14 51.62	7.315	11 57 1.7	43.18
3	22 17 22.08	7.306	11 42 10.5	43.43	3 3 24.6	22 17 46.99	7.299	11 39 42.3	43.43
4	22 20 17.24	7.290	11 24 45.3	43.67	4 3 23.6	22 20 41.97	7.283	11 22 17.0	43.67
5	22 23 12.03	7.275	11 7 14.4	43.91	5 3 22.6	22 23 36.58	7.267	11 4 46.1	43.90
6	22 26 6.44	7.259	10 49 37.9	44.13	6 3 21.5	22 26 30.82	7.252	10 47 9.6	44.13
7	22 29 0.47	7.244	10 31 56.0	44.35	7 3 20.5	22 29 24.68	7.237	10 29 27.8	44.34
8	22 31 54.15	7.229	10 14 9.0	44.56	8 3 19.4	22 32 18.18	7.222	10 11 40.8	44.55
9	22 34 47.47	7.215	9 56 16.9	44.77	9 3 18.4	22 35 11.33	7.207	9 53 48.8	44.76
10	22 37 40.45	7.201	9 38 20.1	44.96	10 3 17.3	22 38 4.13	7.193	9 35 52.2	44.95
11	22 40 33.10	7.187	9 20 18.7	45.15	11 3 16.3	22 40 56.60	7.179	9 17 51.0	45.14
12	22 43 25.41	7.173	9 2 12.8	45.33	12 3 15.2	22 43 48.74	7.166	8 59 45.3	45.32
13	22 46 17.40	7.160	8 44 2.7	45.51	13 3 14.1	22 46 40.56	7.152	8 41 35.4	45.49
14	22 49 9.07	7.147	8 25 48.5	45.68	14 3 13.0	22 49 32.06	7.139	8 23 21.5	45.65
15	22 52 0.42	7.134	8 7 30.5	45.83	15 3 12.0	22 52 23.24	7.126	8 5 3.8	45.81
16	22 54 51.48	7.121	7 49 8.8	45.97	16 3 10.9	22 55 14.13	7.114	7 46 42.5	45.95
17	22 57 42.24	7.109	7 30 43.7	46.11	17 3 9.8	22 58 4.72	7.101	7 28 17.8	46.09
18	23 0 32.70	7.097	7 12 15.4	46.24	18 3 8.7	23 0 55.01	7.089	7 9 49.9	46.22
19	23 3 22.87	7.085	6 53 44.0	46.37	19 3 7.6	23 3 45.01	7.077	6 51 19.0	46.34
20	23 6 12.76	7.073	6 35 9.7	46.48	20 3 6.4	23 6 34.73	7.065	6 32 45.2	46.45
21	23 9 2.37	7.061	6 16 32.8	46.59	21 3 5.3	23 9 24.17	7.054	6 14 8.9	46.56
22	23 11 51.70	7.050	5 57 53.5	46.69	22 3 4.2	23 12 13.34	7.043	5 55 30.2	46.65
23	23 14 40.76	7.039	5 39 11.9	46.78	23 3 3.1	23 15 2.24	7.032	5 36 49.2	46.75
24	23 17 29.56	7.028	5 20 28.3	46.86	24 3 2.0	23 17 50.87	7.021	5 18 6.2	46.83
25	23 20 18.10	7.018	5 1 42.9	46.93	25 3 0.8	23 20 39.25	7.010	4 59 21.5	46.90
26	23 23 6.40	7.007	4 42 55.9	46.99	26 2 59.7	23 23 27.38	7.000	4 40 35.2	46.95
27	23 25 54.45	6.997	4 24 7.5	47.04	27 2 58.5	23 26 15.27	6.990	4 21 47.5	47.01
28	23 28 42.27	6.987	4 5 17.8	47.09	28 2 57.4	23 29 2.93	6.981	4 2 58.6	47.05
29	23 31 29.86	6.978	3 46 27.1	47.13	29 2 56.3	23 31 50.36	6.972	3 44 8.7	47.09
30	23 34 17.23	6.969	3 27 35.5	47.16	30 2 55.1	23 34 37.57	6.963	3 25 17.9	47.13
31	23 37 4.39	6.961	3 8 43.2	47.19	31 2 53.9	23 37 24.57	6.954	3 6 26.4	47.15
Feb. 1	23 39 51.34	6.953	2 49 50.4	47.21	1 2 52.8	23 40 11.36	6.946	2 47 34.5	47.17
2	23 42 38.10	6.945	2 30 57.3	47.22	2 2 51.6	23 42 57.96	6.938	2 28 42.2	47.18
3	23 45 24.68	6.937	2 12 4.0	47.22	3 2 50.5	23 45 44.38	6.931	2 9 49.8	47.18
4	23 48 11.08	6.930	1 53 10.7	47.22	4 2 49.3	23 48 30.63	6.924	1 50 57.5	47.18
5	23 50 57.32	6.923	1 34 17.5	47.21	5 2 48.1	23 51 16.71	6.917	1 32 5.3	47.17
6	23 53 43.39	6.917	1 15 24.7	47.19	6 2 46.9	23 54 2.63	6.911	1 13 13.4	47.15
7	23 56 29.32	6.911	0 56 32.4	47.16	7 2 45.8	23 56 48.41	6.905	0 54 22.1	47.12
8	23 59 15.12	6.906	0 37 40.8	47.13	8 2 44.6	23 59 34.06	6.899	0 35 31.5	47.09
9	0 2 0.79	6.901	0 18 50.0	47.10	9 2 43.4	0 2 19.58	6.894	− 0 16 41.7	47.05
10	0 4 46.35	6.896	− 0 0 0.1	47.06	10 2 42.2	0 5 4.99	6.889	+ 0 2 7.1	47.01
11	0 7 31.80	6.891	+ 0 18 48.7	47.01	11 2 41.0	0 7 50.29	6.885	0 20 54.8	46.96
12	0 10 17.14	6.887	0 37 36.2	46.95	12 2 39.9	0 10 35.49	6.881	0 39 41.3	46.90
13	0 13 2.39	6.883	0 56 22.2	46.88	13 2 38.7	0 13 20.59	6.877	0 58 26.2	46.83
14	0 15 47.55	6.880	1 15 6.6	46.81	14 2 37.5	0 16 5.61	6.874	1 17 9.4	46.76
15	0 18 32.63	6.877	1 33 49.1	46.73	15 2 36.3	0 18 50.54	6.871	1 35 50.8	46.68
16	0 21 17.64	6.874	1 52 29.6	46.64	16 2 35.1	0 21 35.41	6.868	1 54 30.2	46.59
17	0 24 2.59	6.871	2 11 8.0	46.55	17 2 33.9	0 24 20.21	6.865	2 13 7.4	46.50
18	0 26 47.48	6.869	2 29 44.0	46.45	18 2 32.7	0 27 4.96	6.863	2 31 42.2	46.40
19	0 29 32.31	6.867	2 48 17.6	46.34	19 2 31.5	0 29 49.65	6.861	2 50 14.6	46.29
20	0 32 17.10	6.865	3 6 48.5	46.23	20 2 30.3	0 32 34.30	6.859	3 8 44.3	46.18
21	0 35 1.85	6.863	3 25 16.5	46.10	21 2 29.1	0 35 18.91	6.857	3 27 11.1	46.05
22	0 37 46.56	6.862	3 43 41.5	45.97	22 2 27.9	0 38 3.48	6.856	3 45 34.8	45.92
23	0 40 31.24	6.861	4 2 3.2	45.83	23 2 26.7	0 40 48.02	6.855	4 3 55.3	45.78
24	0 43 15.90	6.861	4 20 21.6	45.69	24 2 25.5	0 43 32.54	6.854	4 22 12.4	45.63
25	0 46 0.55	6.860	4 38 36.4	45.54	25 2 24.3	0 46 17.05	6.854	4 40 25.9	45.48
26	0 48 45.18	6.859	4 56 47.5	45.38	26 2 23.1	0 49 1.54	6.854	4 58 35.7	45.33
27	0 51 29.80	6.859	5 14 54.8	45.22	27 2 21.9	0 51 46.03	6.854	5 16 41.8	45.16
28	0 54 14.43	6.860	5 32 58.1	45.05	28 2 20.7	0 54 30.52	6.854	5 34 43.8	44.99
29	0 56 59.08	6.861	5 50 57.2	44.87	29 2 19.5	0 57 15.04	6.855	5 52 41.5	44.82
30	0 59 43.75	+6.862	+ 6 8 52.0	+44.69	30 2 18.3	0 59 59.57	+6.856	+ 6 10 35.0	+44.63

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	0 56 59.08	+6.861	+ 5 50 57.2	+44.87	1 2 19.5	0 57 15.04	+6.855	+ 5 52 41.5	+44.82
2	0 59 43.75	6.862	6 8 52.0	44.69	2 2 18.3	0 59 59.57	6.856	6 10 35.0	44 63
3	1 2 28.44	6.863	6 26 42.4	44.50	3 2 17.2	1 2 44.13	6.857	6 28 24.1	44.44
4	1 5 13.18	6.865	6 44 28.2	44.31	4 2 16.0	1 5 28.74	6.859	6 46 8.6	44.25
5	1 7 57.96	6.867	7 2 9.2	44.11	5 2 14.8	1 8 13.38	6.861	7 3 48.3	44.05
6	1 10 42.78	6.869	7 19 45.4	43.91	6 2 13.6	1 10 58.07	6.863	7 21 23.1	43.85
7	1 13 27.66	6.872	7 37 16.6	43.70	7 2 12.4	1 13 42.82	6.866	7 38 53.0	43.64
8	1 16 12.62	6.875	7 54 42.6	43.48	8 2 11.2	1 16 27.65	6.869	7 56 17.7	43.42
9	1 18 57.65	6.878	8 12 3.4	43.26	9 2 10.0	1 19 12.55	6.873	8 13 37.1	43.20
10	1 21 42.77	6.882	8 29 18.8	43.03	10 2 8.8	1 21 57.54	6.877	8 30 51.1	42.97
11	1 24 27.99	6.886	8 46 28.7	42.80	11 2 7.6	1 24 42.63	6.881	8 47 59.7	42.73
12	1 27 13.30	6.890	9 3 32.9	42.56	12 2 6.4	1 27 27.82	6.885	9 5 2.6	42.49
13	1 29 58.72	6.894	9 20 31.4	42.31	13 2 5.2	1 30 13.11	6.889	9 21 59.7	42.25
14	1 32 44.25	6.899	9 37 23.9	42.06	14 2 4.1	1 32 58.51	6.894	9 38 50.8	42.00
15	1 35 29.89	6.904	9 54 10.3	41.80	15 2 2.9	1 35 44.03	6.899	9 55 35.9	41.75
16	1 38 15.66	6.910	10 10 50.5	41.54	16 2 1.7	1 38 29.67	6.904	10 12 14.8	41.49
17	1 41 1.55	6.915	10 27 24.4	41.27	17 2 0.5	1 41 15.44	6.909	10 28 47.3	41.22
18	1 43 47.57	6.920	10 43 51.8	41.00	18 1 59.3	1 44 1.34	6.915	10 45 13.3	40.94
19	1 46 33.73	6.925	11 0 12.5	40.72	19 1 58.2	1 46 47.37	6.921	11 1 32.7	40.66
20	1 49 20.02	6.931	11 16 26.3	40.43	20 1 57.0	1 49 33.54	6.927	11 17 45.2	40.37
21	1 52 6.44	6.937	11 32 33.2	40.14	21 1 55.8	1 52 19.84	6.933	11 33 50.7	40.08
22	1 54 53.02	6.944	11 48 33.1	39.84	22 1 54.7	1 55 6.29	6.939	11 49 49.2	39.79
23	1 57 39.74	6.950	12 4 25.7	39.54	23 1 53.5	1 57 52.89	6.945	12 5 40.5	39.48
24	2 0 26.61	6.956	12 20 10.9	39.23	24 1 52.3	2 0 39.63	6.951	12 21 24.3	39.17
25	2 3 13.62	6.962	12 35 48.5	38.91	25 1 51.2	2 3 26.52	6.957	12 37 0.6	38.85
26	2 6 0.77	6.968	12 51 18.5	38.59	26 1 50.0	2 6 13.55	6.963	12 52 29.3	38.53
27	2 8 48.09	6.975	13 6 40.8	38.26	27 1 48.9	2 9 0.75	6.970	13 7 50.2	38.20
28	2 11 35.58	6.982	13 21 55.1	37.93	28 1 47.7	2 11 48.12	6.977	13 23 3.2	37.87
29	2 14 23.24	6.989	13 37 1.4	37.59	29 1 46.6	2 14 35.66	6.984	13 38 8.2	37.53
30	2 17 11.06	6.996	13 51 59.6	37.25	30 1 45.4	2 17 23.36	6.991	13 53 5.0	37.19
31	2 19 59.06	7.003	14 6 49.5	36.90	31 1 44.3	2 20 11.24	6.998	14 7 53.6	36.85
Apr. 1	2 22 47.23	7.011	14 21 31.0	36.55	1 1 43.2	2 22 59.28	7.005	14 22 33.8	36.50
2	2 25 35.58	7.018	14 36 4.1	36.20	2 1 42.0	2 25 47.51	7.013	14 37 5.6	36.14
3	2 28 24.12	7.026	14 50 28.5	35.84	3 1 40.9	2 28 35.93	7.021	14 51 28.8	35.79
4	2 31 12.84	7.034	15 4 44.3	35.48	4 1 39.8	2 31 24.54	7.029	15 5 43.3	35.42
5	2 34 1.76	7.042	15 18 51.3	35.11	5 1 38.6	2 34 13.34	7.037	15 19 49.0	35.05
6	2 36 50.87	7.050	15 32 49.4	34.73	6 1 37.5	2 37 2.33	7.045	15 33 45.8	34.68
7	2 39 40.18	7.059	15 46 38.4	34.35	7 1 36.4	2 39 51.52	7.054	15 47 33.6	34.30
8	2 42 29.70	7.067	16 0 18.3	33.97	8 1 35.3	2 42 40.92	7.063	16 1 12.3	33.92
9	2 45 19.43	7.076	16 13 49.1	33.59	9 1 34.2	2 45 30.54	7.072	16 14 41.8	33.54
10	2 48 9.37	7.085	16 27 10.5	33.20	10 1 33.1	2 48 20.36	7.081	16 28 2.0	33.15
11	2 50 59.52	7.094	16 40 22.5	32.80	11 1 32.0	2 51 10.39	7.089	16 41 12.7	32.75
12	2 53 49.87	7.102	16 53 25.0	32.40	12 1 30.8	2 54 0.62	7.098	16 54 14.0	32.35
13	2 56 40.43	7.111	17 6 17.8	32.00	13 1 29.7	2 56 51.07	7.107	17 7 5.6	31.94
14	2 59 31.21	7.120	17 19 0.8	31.59	14 1 28.7	2 59 41.73	7.116	17 19 47.5	31.53
15	3 2 22.20	7.129	17 31 33.9	31.17	15 1 27.6	3 2 32.60	7.124	17 32 19.4	31.12
16	3 5 13.39	7.138	17 43 57.1	30.75	16 1 26.5	3 5 23.68	7.132	17 44 41.4	30.70
17	3 8 4.79	7.146	17 56 10.1	30.33	17 1 25.4	3 8 14.96	7.141	17 56 53.3	30.28
18	3 10 56.39	7.155	18 8 13.0	29.90	18 1 24.3	3 11 6.44	7.149	18 8 55.0	29.86
19	3 13 48.20	7.163	18 20 5.6	29.47	19 1 23.2	3 13 58.13	7.157	18 20 46.4	29.43
20	3 16 40.20	7.171	18 31 47.7	29.04	20 1 22.2	3 16 50.02	7.166	18 32 27.4	28.99
21	3 19 32.40	7.179	18 43 19.3	28.60	21 1 21.1	3 19 42.10	7.174	18 43 57.9	28.55
22	3 22 24.79	7.187	18 54 40.3	28.16	22 1 20.0	3 22 34.38	7.182	18 55 17.8	28.11
23	3 25 17.38	7.195	19 5 50.6	27.71	23 1 19.0	3 25 26.85	7.190	19 6 27.0	27.66
24	3 28 10.15	7.203	19 16 50.1	27.26	24 1 17.9	3 28 19.50	7.198	19 17 25.4	27.21
25	3 31 3.11	7.211	19 27 38.7	26.80	25 1 16.8	3 31 12.35	7.206	19 28 13.0	26.75
26	3 33 56.26	7.219	19 38 16.4	26.34	26 1 15.8	3 34 5.38	7.213	19 38 49.6	26.29
27	3 36 49.59	7.226	19 48 43.0	25.88	27 1 14.7	3 36 58.59	7.221	19 49 15.2	25.83
28	3 39 43.11	7.234	19 58 58.4	25.41	28 1 13.7	3 39 51.99	7.228	19 59 29.6	25.37
29	3 42 36.80	7.241	20 9 2.6	24.94	29 1 12.6	3 42 45.57	7.236	20 9 32.8	21.90
30	3 45 30.67	7.248	20 18 55.6	24.47	30 1 11.6	3 45 39.32	7.243	20 19 24.8	24.43
31	3 48 24.71	+7.255	+20 28 37.2	+24.00	31 1 10.5	3 48 33.24	+7.250	+20 29 5.4	+23.96

MARS, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	3 48 24.71	+7.255	+20 28 37.2	+24.00	1 1 10.5	3 48 33.24	+7.250	+20 29 5.4	+23.96
2	3 51 18.92	7.262	20 38 7.4	23.52	2 1 9.5	3 51 27.33	7.258	20 38 34.7	23.48
3	3 54 13.30	7.269	20 47 26.2	23.04	3 1 8.5	3 54 21.59	7.265	20 47 52.5	23.00
4	3 57 7.85	7.276	20 56 33.4	22.56	4 1 7.4	3 57 16.03	7.272	20 56 58.7	22.52
5	4 0 2.57	7.283	21 5 29.0	22.07	5 1 6.4	4 0 10.63	7.279	21 5 53.4	22.04
6	4 2 57.45	7.290	21 14 13.0	21.59	6 1 5.4	4 3 5.39	7.285	21 14 36.5	21.55
7	4 5 52.49	7.297	21 22 45.2	21.10	7 1 4.4	4 6 0.32	7.291	21 23 7.8	21.06
8	4 8 47.69	7.303	21 31 5.6	20.61	8 1 3.3	4 8 55.40	7.298	21 31 27.4	20.57
9	4 11 43.04	7.309	21 39 14.2	20.11	9 1 2.3	4 11 50.63	7.304	21 39 35.1	20.07
10	4 14 38.54	7.315	21 47 10.9	19.61	10 1 1.3	4 14 46.01	7.310	21 47 30.9	19.58
11	4 17 34.17	7.321	21 54 55.7	19.11	11 1 0.3	4 17 41.52	7.316	21 55 14.9	19.08
12	4 20 29.94	7.327	22 2 28.4	18.61	12 0 59.3	4 20 37.18	7.322	22 2 46.8	18.58
13	4 23 25.85	7.332	22 9 49.0	18.11	13 0 58.3	4 23 32.97	7.327	22 10 6.6	18.08
14	4 26 21.88	7.337	22 16 57.5	17.60	14 0 57.2	4 26 28.88	7.332	22 17 14.3	17.57
15	4 29 18.03	7.342	22 23 53.8	17.09	15 0 56.2	4 29 24.91	7.337	22 24 9.8	17.06
16	4 32 14.29	7.346	22 30 37.9	16.58	16 0 55.2	4 32 21.05	7.341	22 30 53.1	16.55
17	4 35 10.65	7.350	22 37 9.7	16.07	17 0 54.2	4 35 17.29	7.345	22 37 24.2	16.03
18	4 38 7.10	7.354	22 43 29.1	15.56	18 0 53.2	4 38 13.62	7.349	22 43 43.0	15.52
19	4 41 3.64	7.357	22 49 36.2	15.04	19 0 52.2	4 41 10.04	7.352	22 49 49.3	15.00
20	4 44 0.25	7.360	22 55 30.9	14.52	20 0 51.2	4 44 6.54	7.355	22 55 43.3	14.49
21	4 46 56.93	7.363	23 1 13.1	14.00	21 0 50.2	4 47 3.10	7.358	23 1 24.8	13.97
22	4 49 53.66	7.365	23 6 42.9	13.48	22 0 49.2	4 49 59.71	7.360	23 6 53.9	13.45
23	4 52 50.45	7.367	23 12 0.1	12.95	23 0 48.2	4 52 56.37	7.362	23 12 10.5	12.93
24	4 55 47.28	7.369	23 17 4.7	12.43	24 0 47.3	4 55 53.08	7.364	23 17 14.5	12.41
25	4 58 44.14	7.370	23 21 56.8	11.91	25 0 46.3	4 58 49.82	7.365	23 22 6.0	11.89
26	5 1 41.03	7.371	23 26 36.4	11.39	26 0 45.3	5 1 46.59	7.366	23 26 45.0	11.36
27	5 4 37.94	7.371	23 31 3.4	10.86	27 0 44.3	5 4 43.38	7.366	23 31 11.4	10.84
28	5 7 34.86	7.372	23 35 17.7	10.34	28 0 43.3	5 7 40.18	7.367	23 35 25.1	10.31
29	5 10 31.79	7.372	23 39 19.4	9.81	29 0 42.3	5 10 36.98	7.367	23 39 26.3	9.79
30	5 13 28.72	7.372	23 43 8.5	9.29	30 0 41.3	5 13 33.79	7.367	23 43 14.9	9.26
31	5 16 25.64	7.371	23 46 45.1	8.76	31 0 40.3	5 16 30.59	7.367	23 46 51.0	8.74
June 1	5 19 22.55	7.371	23 50 9.0	8.23	1 0 39.3	5 19 27.38	7.366	23 50 14.4	8.21
2	5 22 19.44	7.370	23 53 20.2	7.70	2 0 38.3	5 22 24.14	7.365	23 53 25.1	7.69
3	5 25 16.30	7.369	23 56 18.8	7.18	3 0 37.3	5 25 20.88	7.364	23 56 23.3	7.16
4	5 28 13.14	7.368	23 59 4.8	6.65	4 0 36.3	5 28 17.60	7.363	23 59 8.8	6.64
5	5 31 9.94	7.366	24 1 38.2	6.12	5 0 35.3	5 31 14.28	7.361	24 1 41.8	6.11
6	5 34 6.70	7.364	24 3 59.0	5.60	6 0 34.3	5 34 10.91	7.359	24 4 2.2	5.59
7	5 37 3.40	7.362	24 6 7.1	5.07	7 0 33.3	5 37 7.49	7.356	24 6 10.0	5.06
8	5 40 0.04	7.359	24 8 2.7	4.55	8 0 32.3	5 40 4.00	7.353	24 8 5.2	4.54
9	5 42 56.61	7.356	24 9 45.7	4.02	9 0 31.3	5 43 0.45	7.350	24 9 47.8	4.02
10	5 45 53.10	7.352	24 11 16.1	3.50	10 0 30.3	5 45 56.82	7.346	24 11 17.9	3.49
11	5 48 49.49	7.348	24 12 33.9	2.98	11 0 29.3	5 48 53.09	7.342	24 12 35.4	2.97
12	5 51 45.78	7 343	24 13 39.2	2.46	12 0 28.3	5 51 49.25	7.338	24 13 40.4	2.45
13	5 54 41.97	7.339	24 14 32.0	1.94	13 0 27.3	5 54 45.31	7.334	24 14 32.9	1.93
14	5 57 38.04	7.334	24 15 12.3	1.42	14 0 26.3	5 57 41.26	7.329	24 15 12.9	1.41
15	6 0 33.99	7.328	24 15 40.1	0.90	15 0 25.3	6 0 37.08	7.323	24 15 40.5	0.89
16	6 3 29.80	7.322	24 15 55.4	+ 0.38	16 0 24.3	6 3 32.77	7.317	24 15 55.6	+ 0.37
17	6 6 25.47	7.316	24 15 58.3	– 0.14	17 0 23.3	6 6 28.31	7.311	24 15 58.2	– 0.15
18	6 9 20.98	7.309	24 15 48.9	0.65	18 0 22.3	6 9 23.69	7.304	24 15 48.6	0.66
19	6 12 16.31	7.302	24 15 27.1	1.17	19 0 21.2	6 12 18.90	7.297	24 15 26.7	1.17
20	6 15 11.46	7.294	24 14 53.0	1.68	20 0 20.2	6 15 13.92	7.289	24 14 52.4	1.68
21	6 18 6.43	7.286	24 14 6.6	2.19	21 0 19.2	6 18 8.76	7.281	24 14 5.9	2.19
22	6 21 1.20	7.278	24 13 8.0	2.70	22 0 18.2	6 21 3.40	7.273	24 13 7.2	2.70
23	6 23 55.77	7.269	24 11 57.3	3.20	23 0 17.1	6 23 57.84	7.264	24 11 56.4	3.20
24	6 26 50.12	7.260	24 10 34.5	3.70	24 0 16.1	6 26 52.07	7.255	24 10 33.5	3.70
25	6 29 44.26	7.251	24 8 59.6	4.20	25 0 15.1	6 29 46.08	7.246	24 8 58.5	4.20
26	6 32 38.18	7.242	24 7 12.7	4.70	26 0 14.0	6 32 39.87	7.236	24 7 11.6	4.70
27	6 35 31.87	7.232	24 5 13.8	5.20	27 0 13.0	6 35 33.43	7.227	24 5 12.7	5.20
28	6 38 25.33	7.222	24 3 3.0	5.69	28 0 11.9	6 38 26.76	7.217	24 3 1.9	5.69
29	6 41 18.54	7.212	24 0 40.5	6.18	29 0 10.9	6 41 19.85	7.207	24 0 39.4	6.18
30	6 44 11.51	7.202	23 58 6.3	6.67	30 0 9.8	6 44 12.69	7.197	23 58 5.2	6.67
31	6 47 4.23	+7.191	+23 55 20.3	– 7.16	31 0 8.7	6 47 5.28	+7.186	+23 55 19.2	– 7.16

Date. 1874.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	6 47 4.23	+7.191	+23 55 20.3	− 7.16	1 0 8.7	6 47 5.28	+7.186	+23 55 19.2	− 7.16
2	6 49 56.69	7.180	23 52 22.6	7.64	2 0 7.7	6 49 57.61	7.175	23 52 21.6	7.64
3	6 52 48.88	7.169	23 49 13.4	8.12	3 0 6.6	6 52 49.67	7.164	23 49 12.5	8.12
4	6 55 40.81	7.158	23 45 52.7	8.60	4 0 5.5	6 55 41.47	7.153	23 45 51.9	8.60
5	6 58 32.46	7.147	23 42 20.5	9.08	5 0 4.4	6 58 32.99	7.141	23 42 19.8	9.07
6	7 1 23.84	7.135	23 38 36.9	9.55	6 0 3.4	7 1 24.24	7.129	23 38 36.4	9.54
7	7 4 14.93	7.123	23 34 42.0	10.02	7 0 2.3	7 4 15.20	7.117	23 34 41.6	10.01
8	7 7 5.73	7.111	23 30 35.8	10.49	8 0 1.2	7 7 5.87	7.105	23 30 35.6	10.48
9	7 9 56.24	7.098	23 26 18.5	10.95	9 0 0.1	7 9 56.25	7.092	23 26 18.5	10.94
					9 23 59.0	7 12 46.32	7.079	23 21 50.3	11.40
10	7 12 46.44	7.085	23 21 50.1	11.41	10 23 57.9	7 15 36.07	7.066	23 17 11.1	11.86
11	7 15 36.32	7.072	23 17 10.7	11.87	11 23 56.7	7 18 25.51	7.053	23 12 21.0	12.31
12	7 18 25.89	7.059	23 12 20.3	12.33	12 23 55.6	7 21 14.62	7.040	23 7 20.1	12.76
13	7 21 15.13	7.045	23 7 19.1	12.78	13 23 54.5	7 24 3.40	7.026	23 2 8.3	13.21
14	7 24 4.05	7.031	23 2 7.1	13.22	14 23 53.4	7 26 51.85	7.012	22 56 46.0	13.65
15	7 26 52.63	7.017	22 56 44.5	13.66	15 23 52.2	7 29 39.96	6.997	22 51 13.1	14.09
16	7 29 40.87	7.003	22 51 11.2	14.10	16 23 51.1	7 32 27.72	6.982	22 45 29.7	14.52
17	7 32 28.76	6.988	22 45 27.5	14.54	17 23 49.9	7 35 15.12	6.967	22 39 35.9	14.95
18	7 35 16.29	6.973	22 39 33.4	14.97	18 23 48.8	7 38 2.17	6.952	22 33 31.8	15.38
19	7 38 3.47	6.958	22 33 28.9	15.40	19 23 47.6	7 40 48.85	6.937	22 27 17.5	15.81
20	7 40 50.28	6.943	22 27 14.2	15.82	20 23 46.4	7 43 35.16	6.922	22 20 53.1	16.23
21	7 43 36.72	6.928	22 20 49.4	16.24	21 23 45.3	7 46 21.09	6.907	22 14 18.7	16.64
22	7 46 22.79	6.912	22 14 14.6	16.66	22 23 44.1	7 49 6.66	6.891	22 7 34.3	17.05
23	7 49 8.49	6.896	22 7 29.8	17.07	23 23 42.9	7 51 51.85	6.875	22 0 40.2	17.46
24	7 51 53.81	6.880	22 0 35.2	17.48	24 23 41.7	7 54 36.66	6.859	21 53 36.3	17.86
25	7 54 38.75	6.865	21 53 30.8	17.88	25 23 40.5	7 57 21.09	6.843	21 46 22.8	18.26
26	7 57 23.32	6.849	21 46 16.9	18.28	26 23 39.3	8 0 5.14	6.827	21 38 59.8	18.66
27	8 0 7.50	6.833	21 38 53.4	18.68	27 23 38.1	8 2 48.81	6.812	21 31 27.3	19.05
28	8 2 51.30	6.817	21 31 20.4	19.07	28 23 36.9	8 5 32.10	6.796	21 23 45.5	19.44
29	8 5 34.72	6.801	21 23 38.0	19.46	29 23 35.7	8 8 15.01	6.780	21 15 54.4	19.82
30	8 8 17.76	6.785	21 15 46.4	19.84	30 23 34.4	8 10 57.53	6.764	21 7 54.3	20.20
31	8 11 0.41	6.769	21 7 45.7	20.22	31 23 33.2	8 13 39.66	6.748	20 59 45.1	20 57
Aug. 1	8 13 42.68	6.753	20 59 35.9	20.60	1 23 31.9	8 16 21.42	6.732	20 51 26.8	20.94
2	8 16 24.57	6.737	20 51 17.0	20.97	2 23 30.7	8 19 2.80	6.716	20 42 59.6	21.31
3	8 19 6.08	6.721	20 42 49.2	21.34	3 23 29.4	8 21 43.78	6.700	20 34 23.7	21.67
4	8 21 47.20	6.706	20 34 12.7	21.70	4 23 28.2	8 24 24.39	6.684	20 25 39.2	22.03
5	8 24 27.94	6.690	20 25 27.5	22.06	5 23 26.9	8 27 4.62	6.668	20 16 46.1	22.39
6	8 27 8.30	6.673	20 16 33.7	22.42	6 23 25.6	8 29 44.46	6.652	20 7 44.4	22.75
7	8 29 48.27	6.657	20 7 31.3	22.77	7 23 24.4	8 32 23.91	6.636	19 58 34.3	23.09
8	8 32 27.85	6.641	19 58 20.6	23.12	8 23 23.1	8 35 2.97	6 619	19 49 16.0	23.43
9	8 35 7.05	6.625	19 49 1.6	23.46	9 23 21.8	8 37 41.64	6.603	19 39 49.6	23.77
10	8 37 45.85	6.609	19 39 34.4	23.80	10 23 20.5	8 40 19.92	6.587	19 30 15.1	24.10
11	8 40 24.26	6.592	19 29 59.2	24.13	11 23 19.2	8 42 57.80	6.570	19 20 32.6	24.43
12	8 43 2.28	6.575	19 20 16.0	24.46	12 23 17.8	8 45 35.29	6.554	19 10 42.4	24.75
13	8 45 39.90	6.559	19 10 25.0	24.79	13 23 16.5	8 48 12.39	6.537	19 0 44.4	25.07
14	8 48 17.13	6.542	19 0 26.2	25.11	14 23 15.2	8 50 49.09	6.521	18 50 38.9	25.39
15	8 50 53.96	6.526	18 50 19.9	25.42	15 23 13.9	8 53 25.39	6.504	18 40 25.8	25.70
16	8 53 30.39	6.510	18 40 6.0	25.73	16 23 12.5	8 56 1.30	6.488	18 30 5.3	26.00
17	8 56 6.44	6.494	18 29 44.7	26.04	17 23 11.2	8 58 36.83	6.472	18 19 37.5	26.30
18	8 58 42.10	6.477	18 19 16.1	26.34	18 23 9.8	9 1 11.96	6.455	18 9 2.6	26.60
19	9 1 17.36	6.461	18 8 40.3	26.64	19 23 8.5	9 3 46.69	6.439	17 58 20.6	26.89
20	9 3 52.23	6.444	17 57 57.4	26.93	20 23 7.1	9 6 21.02	6.422	17 47 31.7	27.18
21	9 6 26.69	6.428	17 47 7.7	27.22	21 23 5.7	9 8 54.96	6.406	17 36 36.0	27.46
22	9 9 0.76	6.412	17 36 11.1	27.50	22 23 4.3	9 11 28.52	6.390	17 25 33.6	27.74
23	9 11 34.45	6.396	17 25 7.8	27.78	23 23 3.0	9 14 1.69	6.374	17 14 24.5	28.02
24	9 14 7.75	6.380	17 13 57.8	28.05	24 23 1.6	9 16 34.48	6.359	17 3 8.9	28.29
25	9 16 40.68	6.364	17 2 41.3	28.32	25 23 0.2	9 19 6.91	6.343	16 51 46.8	28.55
26	9 19 13.24	6.349	16 51 18.3	28.59	26 22 58.8	9 21 38.97	6.328	16 40 18.4	28.81
27	9 21 45.44	6.334	16 39 48.9	28.85	27 22 57.4	9 24 10.67	6.313	16 28 43.7	29.07
28	9 24 17.27	6.319	16 28 13.3	29.11	28 22 55.9	9 26 42.01	6.298	16 17 2.8	29.32
29	9 26 48.74	6.304	16 16 31.5	29.37	29 22 54.5	9 29 13.00	6.283	16 5 15.9	29.57
30	9 29 19.86	6.289	16 4 43.6	29.62	30 22 53.1	9 31 43.62	6.269	15 53 23.1	29.82
31	9 31 50.62	+6.274	+15 52 49.8	−29.87	31 22 51.7	9 34 13.90	+6.255	+15 41 24.4	−30.06

MARS, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	9 34 21.03	+6.260	+15 40 50.1	-30.11	1 22 50.2	9 36 43.83	+6.240	+15 29 19.8	-30.30
2	9 36 51.10	6.246	15 28 44.5	30.35	2 22 48.8	9 39 13.42	6.226	15 17 9.6	30.54
3	9 39 20.82	6.231	15 16 33.3	30.58	3 22 47.3	9 41 42.67	6.212	15 4 53.9	30.77
4	9 41 50.20	6.217	15 4 16.6	30.81	4 22 45.9	9 44 11.58	6.198	14 52 32.8	30.99
5	9 44 19.25	6.203	14 51 54.5	31.04	5 22 44.4	9 46 40.16	6.184	14 40 6.4	31.21
6	9 46 47.96	6.189	14 39 27.0	31.26	6 22 42.9	9 49 8.41	6.170	14 27 34.6	31.43
7	9 49 16.34	6.175	14 26 54.2	31.48	7 22 41.5	9 51 36.32	6.156	14 14 57.7	31.64
8	9 51 44.38	6.162	14 14 16.3	31.69	8 22 40.0	9 54 3.90	6.142	14 2 15.8	31.85
9	9 54 12 10	6.148	14 1 33.3	31.89	9 22 38.5	9 56 31.16	6.129	13 49 29.0	32.05
10	9 56 39.49	6.135	13 48 45.4	32.09	10 22 37.0	9 58 58.09	6.115	13 36 37.4	32.25
11	9 59 6.56	6.121	13 35 52.8	32.29	11 22 35.5	10 1 24.70	6.102	13 23 41.1	32.44
12	10 1 33.30	6.108	13 22 55.4	32.49	12 22 34.0	10 3 50.99	6.089	13 10 40.3	32.63
13	10 3 59.73	6.094	13 9 53.5	32.68	13 22 32.5	10 6 16.97	6.076	12 57 35.0	32.81
14	10 6 25.84	6.081	12 56 47.1	32.86	14 22 31.0	10 8 42.64	6.063	12 44 25.4	32.99
15	10 8 51.64	6.068	12 43 36.4	33.04	15 22 29.5	10 11 7.99	6.050	12 31 11.5	33.16
16	10 11 17.13	6.056	12 30 21.4	33.21	16 22 28.0	10 13 33.04	6.037	12 17 53.4	33.33
17	10 13 42.31	6.043	12 17 2.2	33.38	17 22 26.4	10 15 57.79	6.025	12 4 31.3	33.50
18	10 16 7.20	6.031	12 3 39.0	33.55	18 22 24.9	10 18 22.25	6.013	11 51 5.3	33.66
19	10 18 31.80	6.018	11 50 11.9	33.71	19 22 23.4	10 20 46.42	6.001	11 37 35.5	33.82
20	10 20 56.10	6.006	11 36 40.9	33.87	20 22 21.8	10 23 10.30	5.989	11 24 1.9	33.98
21	10 23 20.11	5.994	11 23 6.2	34.03	21 22 20.3	10 25 33.90	5.977	11 10 24.6	34.13
22	10 25 43.85	5.983	11 9 27.8	34.18	22 22 18.7	10 27 57.23	5.966	10 56 43.7	34.28
23	10 28 7.31	5.972	10 55 45.8	34.33	23 22 17.2	10 30 20.29	5.955	10 42 59.4	34.42
24	10 30 30.51	5.961	10 42 0.3	34.47	24 22 15.6	10 32 43.09	5.945	10 29 11.7	34.56
25	10 32 53.44	5.950	10 28 11.5	34.61	25 22 14.1	10 35 5.63	5.934	10 15 20.7	34.69
26	10 35 16.12	5.940	10 14 19.4	34.74	26 22 12.5	10 37 27.93	5.924	10 1 26.5	34.82
27	10 37 38.56	5.930	10 0 24.0	34.87	27 22 10.9	10 39 49.99	5.914	9 47 29.1	34.95
28	10 40 0.75	5.920	9 46 25.5	35.00	28 22 9.3	10 42 11.80	5.904	9 33 28.7	35.08
29	10 42 22.70	5.910	9 32 24.0	35.13	29 22 7.8	10 44 33.38	5.895	9 19 25.4	35.20
30	10 44 44.42	5.900	9 18 19.5	35.25	30 22 6.2	10 46 54.74	5.885	9 5 19.2	35.32
Oct. 1	10 47 5.92	5.891	9 4 12.1	35.37	1 22 4.6	10 49 15.88	5.876	8 51 10.2	35.43
2	10 49 27.19	5.882	8 50 2.0	35.48	2 22 3.0	10 51 36.80	5.867	8 36 58.6	35.54
3	10 51 48.25	5.873	8 35 49.2	35.59	3 22 1.4	10 53 57.51	5.858	8 22 44.4	35.64
4	10 54 9.10	5.864	8 21 33.9	35.69	4 21 59.8	10 56 18.00	5.849	8 8 27.8	35.74
5	10 56 29.73	5.855	8 7 16.1	35.79	5 21 58.2	10 58 38.29	5.841	7 54 8.8	35.84
6	10 58 50.16	5.847	7 52 55.9	35.89	6 21 56.6	11 0 58.37	5.833	7 39 47.5	35.93
7	11 1 10.38	5.838	7 38 33.5	35.98	7 21 55.0	11 3 18.25	5.824	7 25 24.1	36.02
8	11 3 30.40	5.830	7 24 8.9	36.07	8 21 53.4	11 5 37.93	5.816	7 10 58.6	36.10
9	11 5 50.22	5.822	7 9 42.3	36.15	9 21 51.8	11 7 57.42	5.808	6 56 31.2	36.18
10	11 8 9.85	5.814	6 55 13.8	36.23	10 21 50.2	11 10 16.73	5.800	6 42 2.1	36.26
11	11 10 29.30	5.806	6 40 43.5	36.30	11 21 48.6	11 12 35.86	5.793	6 27 31.1	36.33
12	11 12 48.57	5.799	6 26 11.4	36.37	12 21 46.9	11 14 54.80	5.786	6 12 58.4	36.39
13	11 15 7.65	5.791	6 11 37.6	36.44	13 21 45.3	11 17 13.56	5.778	5 58 24 3	36.45
14	11 17 26.55	5.784	5 57 2 4	36.50	14 21 43.7	11 19 32.15	5.771	5 43 48.8	36.51
15	11 19 45.28	5.777	5 42 25.8	36.56	15 21 42.0	11 21 50.57	5.764	5 29 12.0	36.56
16	11 22 3.84	5.770	5 27 47.9	36.61	16 21 40.4	11 24 8.82	5.757	5 14 34.0	36.61
17	11 24 22.23	5.763	5 13 8.7	36.66	17 21 38.8	11 26 26.92	5.751	4 59 54.8	36.65
18	11 26 40.47	5.757	4 58 28.4	36.70	18 21 37.1	11 28 44.86	5.745	4 45 14.6	36.69
19	11 28 58.55	5.751	4 43 47.1	36.74	19 21 35.5	11 31 2.65	5.739	4 30 33.3	36.73
20	11 31 16.49	5.745	4 29 4.7	36.78	20 21 33.8	11 33 20.31	5.733	4 15 51.2	36.77
21	11 33 34.29	5.739	4 14 21.5	36.82	21 21 32.2	11 35 37.83	5.727	4 1 8.3	36.80
22	11 35 51.95	5.733	3 59 37.5	36.85	22 21 30.6	11 37 55.21	5.722	3 46 24.6	36.82
23	11 38 9.48	5.728	3 44 52.8	36.88	23 21 28.9	11 40 12.48	5.717	3 31 40.4	36.85
24	11 40 26.89	5.723	3 30 7.5	36.90	24 21 27.3	11 42 29.63	5.712	3 16 55.6	36.87
25	11 42 44.19	5.718	3 15 21.6	36.92	25 21 25.6	11 44 46.67	5.708	3 2 10.3	36.89
26	11 45 1.38	5.714	3 0 35.2	36.94	26 21 23.9	11 47 3.61	5.704	2 47 24.5	36.91
27	11 47 18.46	5.710	2 45 48.4	36.96	27 21 22.3	11 49 20.45	5.700	2 32 38.5	36.92
28	11 49 35.45	5.706	2 31 1.3	36.97	28 21 20.6	11 51 37.19	5.696	2 17 52.2	36.93
29	11 51 52.34	5.702	2 16 14.0	36.98	29 21 19.0	11 53 53.85	5.692	2 3 5.8	36.94
30	11 54 9.15	5.699	2 1 26.5	36.98	30 21 17.3	11 56 10.43	5.689	1 48 19.3	36.94
31	11 56 25.88	5.695	1 46 39.0	36.98	31 21 15.6	11 58 26.93	5.686	1 33 32.8	36.94
32	11 58 42.52	+5.692	+ 1 31 51.5	-36.98	32 21 14.0	12 0 43.35	+5.682	+ 1 18 46.4	-36.93

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	11 58 42.52	+5.692	+ 1 31 51.5	−36.98	1 21 14.0	12 0 43.35	+5.682	+ 1 18 46.4	−36.93
2	12 0 59.09	5.689	1 17 4.1	36.97	2 21 12.3	12 2 59.69	5.679	1 4 0.2	36.92
3	12 3 15.58	5.686	1 2 17.0	36.96	3 21 10.6	12 5 15.97	5.677	0 49 14.5	36.90
4	12 5 32.01	5.683	0 47 30.2	36.94	4 21 9.0	12 7 32.18	5.674	0 34 29.1	36.88
5	12 7 48.37	5.680	0 32 43.9	36.92	5 21 7.3	12 9 48.33	5.671	0 19 44.3	36.85
6	12 10 4.67	5.677	0 17 58.1	36.90	6 21 5.6	12 12 4.42	5.669	+ 0 5 0.1	36.82
7	12 12 20.91	5.675	+ 0 3 13.0	36.87	7 21 4.0	12 14 20.44	5.666	− 0 9 43.4	36.79
8	12 14 37.08	5.672	− 0 11 31.4	36.83	8 21 2.3	12 16 36.40	5.664	0 24 25.9	36.75
9	12 16 53.19	5.670	0 26 14.9	36.79	9 21 0.6	12 18 52.30	5.662	0 39 7.5	36.71
10	12 19 9.25	5.668	0 40 57.4	36.75	10 20 58.9	12 21 8.15	5.660	0 53 48.0	36.67
11	12 21 25.25	5.666	0 55 38.8	36.70	11 20 57.3	12 23 23.96	5.658	1 8 27.5	36.62
12	12 23 41.21	5.664	1 10 19.1	36.65	12 20 55.6	12 25 39.73	5.656	1 23 5.7	36.56
13	12 25 57.13	5.662	1 24 58.2	36.60	13 20 53.9	12 27 55.45	5.654	1 37 42.6	36.51
14	12 28 13.01	5.661	1 39 35.9	36.54	14 20 52.2	12 30 11.14	5.653	1 52 18.0	36.45
15	12 30 28.85	5.659	1 54 12.2	36.48	15 20 50.6	12 32 26.80	5.652	2 6 52.0	36.38
16	12 32 44.66	5.658	2 8 47.0	36.42	16 20 48.9	12 34 42.42	5.651	2 21 24.4	36.32
17	12 35 0.44	5.657	2 23 20.2	36.35	17 20 47.2	12 36 58.03	5.650	2 35 55.2	36.25
18	12 37 16.20	5.656	2 37 51.8	36.28	18 20 45.5	12 39 13.62	5.649	2 50 24.2	36.17
19	12 39 31.95	5.656	2 52 21.6	36.20	19 20 43.9	12 41 29.19	5.649	3 4 51.4	36.09
20	12 41 47.68	5.655	3 6 49.5	36.13	20 20 42.2	12 43 44.75	5.649	3 19 16.7	36.01
21	12 44 3.40	5.655	3 21 15.6	36.05	21 20 40.5	12 46 0.32	5.649	3 33 40.2	35.93
22	12 46 19.12	5.655	3 35 39.8	35.97	22 20 38.8	12 48 15.89	5.649	3 48 1.6	35.85
23	12 48 34.85	5.655	3 50 1.9	35.88	23 20 37.1	12 50 31.46	5.650	4 2 20.9	35.76
24	12 50 50.58	5.656	4 4 21.9	35.79	24 20 35.5	12 52 47.05	5.650	4 16 38.0	35.67
25	12 53 6.33	5.657	4 18 39.7	35.70	25 20 33.8	12 55 2.66	5.651	4 30 52.9	35.57
26	12 55 22.10	5.657	4 32 55.3	35.60	26 20 32.1	12 57 18.28	5.652	4 45 5.5	35.47
27	12 57 37.88	5.658	4 47 8.5	35.50	27 20 30.4	12 59 33.92	5.653	4 59 15.6	35.37
28	12 59 53.69	5.659	5 1 19.3	35.40	28 20 28.8	13 1 49.59	5.654	5 13 23.2	35.26
29	13 2 9.52	5.660	5 15 27.5	35.29	29 20 27.1	13 4 5.29	5.655	5 27 28.2	35.15
30	13 4 25.38	5.661	5 29 33.1	35.18	30 20 25.4	13 6 21.01	5.656	5 41 30.6	35.04
Dec. 1	13 6 41.27	5.662	5 43 36.0	35.06	1 20 23.7	13 8 36.76	5.657	5 55 30.1	34.92
2	13 8 57.18	5.663	5 57 36.0	34.94	2 20 22.0	13 10 52.54	5.658	6 9 26.7	34.80
3	13 11 13.12	5.665	6 11 33.2	34.82	3 20 20.4	13 13 8.36	5.660	6 23 20.4	34.67
4	13 13 29.10	5.666	6 25 27.4	34.69	4 20 18.7	13 15 24.21	5.661	6 37 11.0	34.54
5	13 15 45.11	5.668	6 39 18.5	34.56	5 20 17.0	13 17 40.09	5.662	6 50 58.4	34.40
6	13 18 1.16	5.669	6 53 6.4	34.43	6 20 15.4	13 19 56.01	5.664	7 4 42.6	34.26
7	13 20 17.24	5.671	7 6 51.0	34.29	7 20 13.7	13 22 11.96	5.665	7 18 23.3	34.12
8	13 22 33.35	5.672	7 20 32.1	34.14	8 20 12.0	13 24 27.93	5.666	7 32 0.5	33.97
9	13 24 49.49	5.673	7 34 9.7	33.99	9 20 10.3	13 26 43.94	5.668	7 45 34.2	33.82
10	13 27 5.66	5.674	7 47 43.8	33.84	10 20 8.7	13 28 59.98	5.669	7 59 4.2	33.67
11	13 29 21.87	5.676	8 1 14.1	33.69	11 20 7.0	13 31 16.06	5.671	8 12 30.4	33.51
12	13 31 38.11	5.677	8 14 40.7	33.53	12 20 5.3	13 33 32.18	5.672	8 25 52.9	33.35
13	13 33 54.39	5.679	8 28 3.5	33.37	13 20 3.7	13 35 48.33	5.674	8 39 11.5	33.19
14	13 36 10.70	5.681	8 41 22.4	33.20	14 20 2.0	13 38 4.52	5.676	8 52 26.1	33.02
15	13 38 27.06	5.682	8 54 37.2	33.03	15 20 0.3	13 40 20.75	5.677	9 5 36.7	32.85
16	13 40 43.46	5.684	9 7 48.0	32.86	16 19 58.7	13 42 37.02	5.679	9 18 43.1	32.68
17	13 42 59.89	5.686	9 20 54.7	32.69	17 19 57.0	13 44 53.33	5.681	9 31 45.4	32.51
18	13 45 16.37	5.688	9 33 57.2	32.51	18 19 55.3	13 47 9.70	5.683	9 44 43.4	32.33
19	13 47 32.90	5.690	9 46 55.4	32.33	19 19 53.7	13 49 26.12	5.685	9 57 37.1	32.15
20	13 49 49.49	5.693	9 59 49.2	32.15	20 19 52.0	13 51 42.59	5.688	10 10 26.5	31.97
21	13 52 6.13	5.695	10 12 38.7	31.97	21 19 50.3	13 53 59.12	5.690	10 23 11.5	31.78
22	13 54 22.83	5.697	10 25 23.8	31.79	22 19 48.7	13 56 15.72	5.693	10 35 52.0	31.59
23	13 56 39.59	5.700	10 38 4.4	31.60	23 19 47.0	13 58 32.37	5.695	10 48 27.9	31.40
24	13 58 56.41	5.702	10 50 40.4	31.41	24 19 45.4	14 0 49.08	5.698	11 0 59.2	31.21
25	14 1 13.29	5.705	11 3 11.7	31.21	25 19 43.7	14 3 5.85	5.700	11 13 25.8	31.01
26	14 3 30.23	5.707	11 15 38.3	31.01	26 19 42.0	14 5 22.68	5.702	11 25 47.6	30.81
27	14 5 47.22	5.709	11 28 0.1	30.81	27 19 40.4	14 7 39.56	5.705	11 38 4.5	30.60
28	14 8 4.27	5.712	11 40 17.0	30.60	28 19 38.7	14 9 56.49	5.707	11 50 16.5	30.39
29	14 10 21.37	5.714	11 52 28.9	30.39	29 19 37.1	14 12 13.48	5.709	12 2 23.4	30.18
30	14 12 38.53	5.716	12 4 35.7	30.18	30 19 35.4	14 14 30.53	5.711	12 14 25.2	29.97
31	14 14 55.74	5.718	12 16 37.4	29.96	31 19 33.8	14 16 47.62	5.713	12 26 21.8	29.75
32	14 17 13.00	+5.720	−12 28 33.9	−29.74	32 19 32.1	14 19 4.76	+5.715	−12 38 13.2	−29.53

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	12 7 13.94	+0.465	+ 0 38 11.1	− 2.28	0 17 23.8	12 7 21.85	+0.444	+ 0 37 32.7	− 2.14
1	12 7 24.76	0.437	0 37 18.6	2.09	1 17 20.0	12 7 32.17	0.417	0 36 43.5	1.96
2	12 7 34.92	0.409	0 36 30.6	1.91	2 17 16.2	12 7 41.82	0.389	0 35 58.7	1.78
3	12 7 44.41	0.381	0 35 47.0	1.72	3 17 12.4	12 7 50.81	0.361	0 35 18.3	1.59
4	12 7 53.23	0.353	0 35 7.8	1.54	4 17 8.6	12 7 59.12	0.332	0 34 42.4	1.40
5	12 8 1.36	0.325	0 34 33.0	1.36	5 17 4.8	12 8 6.74	0.304	0 34 10.9	1.22
6	12 8 8.82	0.297	0 34 2.7	1.17	6 17 1.0	12 8 13.69	0.276	0 33 43.9	1.04
7	12 8 15.59	0.268	0 33 36.9	0.98	7 16 57.2	12 8 19.96	0.247	0 33 21.4	0.85
8	12 8 21.68	0.239	0 33 15.6	0.79	8 16 53.4	12 8 25.55	0.218	0 33 3.3	0.66
9	12 8 27.07	0.210	0 32 58.7	0.60	9 16 49.5	12 8 30.44	0.189	0 32 49.6	0.47
10	12 8 31.77	0.181	0 32 46.4	0.41	10 16 45.6	12 8 34.64	0.160	0 32 40.5	0.28
11	12 8 35 77	0.152	0 32 38.7	0.22	11 16 41.8	12 8 38.14	0.131	0 32 36.0	− 0.09
12	12 8 39.07	0.123	0 32 35.5	− 0.03	12 16 37.9	12 8 40.94	0.102	0 32 36.1	+ 0.10
13	12 8 41.66	0.093	0 32 37.0	+ 0.16	13 16 34.0	12 8 43.04	0.073	0 32 40.7	0.29
14	12 8 43.55	0.064	0 32 43.0	0.35	14 16 30.1	12 8 44.44	0.044	0 32 49.8	0.48
15	12 8 44.73	0.034	0 32 53.6	0.54	15 16 26.2	12 8 45.13	+0.014	0 33 3.5	0.67
16	12 8 45.20	+0.005	0 33 8.8	0.73	16 16 22.3	12 8 45.11	−0.016	0 33 21.8	0.86
17	12 8 44.95	−0.025	0 33 28.6	0.92	17 16 18.3	12 8 44.38	0.046	0 33 44.7	1.05
18	12 8 43.99	0.055	0 33 53.0	1.11	18 16 14.3	12 8 42.94	0.075	0 34 12.1	1.24
19	12 8 42.32	0.085	0 34 21.9	1.30	19 16 10.4	12 8 40.80	0.104	0 34 44.0	1.43
20	12 8 39.94	0.114	0 34 55.4	1.49	20 16 6.4	12 8 37.95	0.133	0 35 20.4	1 61
21	12 8 36.86	0.143	0 35 33.5	1.68	21 16 2.4	12 8 34.41	0.162	0 36 1.4	1.80
22	12 8 33.07	0.172	0 36 16.1	1.87	22 15 58.4	12 8 30.16	0.191	0 36 46.9	1.99
23	12 8 28.58	0.201	0 37 3.2	2.06	23 15 54.4	12 8 25.22	0.220	0 37 36.8	2.18
24	12 8 23.39	0.231	0 37 54.8	2.25	24 15 50.4	12 8 19.59	0.249	0 38 31.1	2.36
25	12 8 17.50	0.260	0 38 50.8	2.43	25 15 46.4	12 8 13.26	0.278	0 39 29 9	2.54
26	12 8 10.92	0.289	0 39 51.3	2.61	26 15 42.3	12 8 6.24	0.307	0 40 33.1	2.72
27	12 8 3.65	0.317	0 40 56.2	2.79	27 15 38.3	12 7 58.54	0.335	0 41 40.7	2.90
28	12 7 55.69	0.346	0 42 5.4	2.97	28 15 34.2	12 7 50.16	0.363	0 42 52.5	3.08
29	12 7 47.04	0.374	0 43 18.9	3.15	29 15 30.1	12 7 41.10	0.391	0 44 8.6	3.26
30	12 7 37.72	0.402	0 44 36.7	3.33	30 15 26.0	12 7 31.37	0.419	0 45 29.0	3.44
31	12 7 27.72	0.430	0 45 58.7	3.51	31 15 21.9	12 7 20.98	0.447	0 46 53.5	3.61
Feb. 1	12 7 17.06	0.458	0 47 24.9	3.68	1 15 17.8	12 7 9.92	0.474	0 48 22.1	3.78
2	12 7 5.73	0.486	0 48 55.3	3.85	2 15 13.7	12 6 58.20	0.501	0 49 54.8	3.95
3	12 6 53.74	0.513	0 50 29.8	4.02	3 15 9.5	12 6 45.83	0.528	0 51 31.6	4.12
4	12 6 41.09	0.540	0 52 8.4	4.19	4 15 5.4	12 6 32.82	0.555	0 53 12.4	4.29
5	12 6 27.80	0.567	0 53 51.0	4.36	5 15 1.2	12 6 19.16	0.582	0 54 57.2	4.45
6	12 6 13.86	0.594	0 55 37.6	4.52	6 14 57.0	12 6 4.86	0.608	0 56 46.0	4.61
7	12 5 59.29	0.620	0 57 28.1	4.68	7 14 52.8	12 5 49.94	0.634	0 58 38.6	4.77
8	12 5 44.09	0.646	0 59 22.5	4.84	8 14 48.6	12 5 34.40	0.660	1 0 35.0	4.93
9	12 5 28.27	0.672	1 1 20.7	5.00	9 14 44.4	12 5 18.25	0.685	1 2 35.2	5.08
10	12 5 11.84	0.697	1 3 22.6	5.16	10 14 40.2	12 5 1.50	0.710	1 4 39.0	5.23
11	12 4 54.82	0.722	1 5 28.2	5.31	11 14 36.0	12 4 44.17	0.734	1 6 46.4	5.38
12	12 4 37.21	0.746	1 7 37.4	5.46	12 14 31.8	12 4 26.27	0.758	1 8 57.4	5.53
13	12 4 19.02	0.770	1 9 50.3	5.60	13 14 27.6	12 4 7.79	0.782	1 11 11.8	5.67
14	12 4 0.25	0.794	1 12 6.5	5.74	14 14 23.3	12 3 48.74	0.805	1 13 29.6	5.81
15	12 3 40.93	0.817	1 14 26.0	5.88	15 14 19.0	12 3 29.16	0 827	1 15 50.7	5.94
16	12 3 21.07	0.839	1 16 48.8	6.01	16 14 14.8	12 3 9.04	0.849	1 18 15.0	6.07
17	12 3 0.67	0.861	1 19 14.8	6.14	17 14 10.5	12 2 48.39	0.871	1 20 42.4	6.20
18	12 2 39.75	0.882	1 21 43.9	6.27	18 14 6.2	12 2 27.23	0.892	1 23 12.8	6.32
19	12 2 18.33	0.902	1 24 15.9	6.39	19 14 1.9	12 2 5.58	0.912	1 25 46.1	6.44
20	12 1 56.43	0.922	1 26 50.8	6.51	20 13 57.6	12 1 43.47	0.931	1 28 22.1	6.56
21	12 1 34.05	0.942	1 29 28.4	6.62	21 13 53.3	12 1 20.89	0.950	1 31 0.8	6.67
22	12 1 11.21	0.961	1 32 8.7	6.73	22 13 49.0	12 0 57.86	0.968	1 33 42.1	6.77
23	12 0 47.93	0.979	1 34 51.5	6.83	23 13 44.7	12 0 34.41	0.985	1 36 25.8	6.87
24	12 0 24.23	0.996	1 37 36.7	6.93	24 13 40.4	12 0 10.55	1.002	1 39 11.8	6.97
25	12 0 0.12	1.013	1 40 24.2	7.02	25 13 36.1	11 59 46.29	1.018	1 42 0.0	7.05
26	11 59 35.62	1.029	1 43 13.8	7.11	26 13 31.7	11 59 21.65	1.033	1 44 50.3	7.14
27	11 59 10.75	1.044	1 46 5.6	7.19	27 13 27.3	11 58 56.64	1.048	1 47 42.7	7.22
28	11 58 45.52	1.059	1 48 59.3	7.27	28 13 23.0	11 58 31.29	1.062	1 50 36.9	7.30
29	11 58 19.95	−1.073	+ 1 51 54.8	+ 7.35	29 13 18.7	11 58 5.61	−1.076	+ 1 53 32 8	+ 7.37

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	11 58 19.95	−1.073	+ 1 51 54.8	+ 7.35	1 13 18.7	11 58 5.61	−1.076	+ 1 53 32.8	+ 7.37
2	11 57 54.05	1.086	1 54 52.1	7.42	2 13 14.3	11 57 39.62	1.089	1 56 30.5	7.43
3	11 57 27.83	1.098	1 57 50.9	7.48	3 13 9.9	11 57 13.33	1.101	1 59 29.6	7.49
4	11 57 1.33	1.110	2 0 51.2	7.54	4 13 5.6	11 56 46.77	1.112	2 2 30.1	7.55
5	11 56 34.56	1.121	2 3 52.9	7.59	5 13 1.2	11 56 19.94	1.123	2 5 31.9	7.60
6	11 56 7.53	1.131	2 6 55.8	7.64	6 12 56.8	11 55 52.86	1.133	2 8 34.9	7.64
7	11 55 40.27	1.140	2 9 59.8	7.68	7 12 52.4	11 55 25.56	1.142	2 11 38.9	7.68
8	11 55 12.79	1.148	2 13 4.8	7.72	8 12 48.0	11 54 58.05	1.150	2 14 43.8	7.72
9	11 54 45.11	1.156	2 16 10.7	7.76	9 12 43.6	11 54 30.36	1.157	2 17 49.5	7.75
10	11 54 17.24	1.163	2 19 17.3	7.79	10 12 39.2	11 54 2.49	1.164	2 20 55.9	7.77
11	11 53 49.22	1.169	2 22 24.4	7.81	11 12 34.8	11 53 34.48	1.170	2 24 2.7	7.79
12	11 53 21.06	1.174	2 25 32 0	7.83	12 12 30.4	11 53 6.34	1.175	2 27 9.9	7.80
13	11 52 52.78	1.179	2 28 40.0	7.84	13 12 26.0	11 52 38.09	1.179	2 30 17.4	7.81
14	11 52 24.40	1.183	2 31 48.1	7.84	14 12 21.6	11 52 9.75	1.182	2 33 25.0	7.81
15	11 51 55.95	1.186	2 34 56.3	7.84	15 12 17.2	11 51 41.35	1.184	2 36 32.6	7.81
16	11 51 27.44	1.188	2 38 4.4	7.83	16 12 12.8	11 51 12.90	1.185	2 39 40.0	7.80
17	11 50 58.89	1.190	2 41 12.2	7.82	17 12 8.4	11 50 44.43	1.186	2 42 47.1	7.79
18	11 50 33.33	1.190	2 44 19.7	7.80	18 12 4.0	11 50 15.96	1.186	2 45 53.8	7.77
19	11 50 1.79	1.189	2 47 26.6	7.77	19 11 59.6	11 49 47.52	1.185	2 48 59.8	7.74
20	11 49 33.27	1.187	2 50 32.9	7.74	20 11 55.2	11 49 19.11	1.183	2 52 5.1	7.70
21	11 49 4.80	1.185	2 53 38.4	7.71	21 11 50.8	11 48 50.76	1.180	2 55 9.6	7.66
22	11 48 36.39	1.182	2 56 42.9	7.67	22 11 46.4	11 48 22.48	1.176	2 58 13.1	7.62
23	11 48 8.08	1.178	2 59 46.4	7.62	23 11 42.0	11 47 54.31	1.171	3 1 15.4	7.57
24	11 47 39.88	1.172	3 2 48.7	7.57	24 11 37.6	11 47 26.26	1.165	3 4 16.5	7.52
25	11 47 11.81	1.166	3 5 49.7	7.51	25 11 33.2	11 46 58.35	1.159	3 7 16.2	7.46
26	11 46 43.90	1.159	3 8 49.2	7.45	26 11 28.8	11 46 30.61	1.152	3 10 14.5	7.39
27	11 46 16.17	1.151	3 11 47.1	7.38	27 11 24.4	11 46 3.05	1.144	3 13 11.1	7.32
28	11 45 48.63	1.143	3 14 43.3	7.31	28 11 20.0	11 45 35.69	1.135	3 16 5.9	7.25
29	11 45 21.30	1.134	3 17 37.7	7.23	29 11 15.6	11 45 8.55	1.126	3 18 58.9	7.17
30	11 44 54.19	1.124	3 20 30.2	7.15	30 11 11.2	11 44 41.64	1.116	3 21 49.9	7.08
31	11 44 27.33	1.113	3 23 20.7	7.06	31 11 6.9	11 44 14.98	1.105	3 24 38.9	6.99
Apr. 1	11 44 0.73	1.102	3 26 9.0	6.97	1 11 2.5	11 43 48.59	1.094	3 27 25.7	6.90
2	11 43 34.40	1.090	3 28 55.0	6.87	2 10 58.1	11 43 22.47	1.082	3 30 10.1	6.80
3	11 43 8.37	1.078	3 31 38.7	6.77	3 10 53.7	11 42 56.66	1.069	3 32 52.2	6.70
4	11 42 42.66	1.065	3 34 19.9	6.66	4 10 49.4	11 42 31.17	1.055	3 35 31.8	6.59
5	11 42 17.28	1.051	3 36 58.6	6.55	5 10 45.0	11 42 6.02	1.041	3 38 8.8	6.48
6	11 41 52.25	1.036	3 39 34.6	6.44	6 10 40.6	11 41 41.22	1.026	3 40 43.1	6.37
7	11 41 27.57	1.021	3 42 7.8	6.32	7 10 36.3	11 41 16.79	1.010	3 43 14.6	6.25
8	11 41 3.26	1.005	3 44 38.2	6.20	8 10 32.0	11 40 52.73	0.994	3 45 43.3	6.13
9	11 40 39.35	0.988	3 47 5.7	6.08	9 10 27.6	11 40 29.06	0.977	3 48 9.1	6.01
10	11 40 15.84	0.971	3 49 30.2	5.95	10 10 23.3	11 40 5.80	0.960	3 50 31.8	5.88
11	11 39 52.76	0.953	3 51 51.5	5.82	11 10 19.0	11 39 42.97	0.942	3 52 51.3	5.75
12	11 39 30.11	0.934	3 54 9.7	5.69	12 10 14.7	11 39 20.58	0.923	3 55 7.7	5.61
13	11 39 7.92	0.914	3 56 24.6	5.55	13 10 10.4	11 38 58.65	0.904	3 57 20.8	5.47
14	11 38 46.20	0.894	3 58 36.1	5.41	14 10 6.1	11 38 37.20	0.884	3 59 30.5	5.33
15	11 38 24.97	0.874	4 0 44.2	5.26	15 10 1.8	11 38 16.24	0.863	4 1 36.7	5.18
16	11 38 4.23	0.853	4 2 48.7	5.11	16 9 57.6	11 37 55.77	0.842	4 3 39.4	5.03
17	11 37 44.00	0.831	4 4 49.6	4.96	17 9 53.3	11 37 35.81	0.820	4 5 38.4	4.88
18	11 37 24.30	0.809	4 6 46.8	4.81	18 9 49.0	11 37 16.38	0.798	4 7 33.7	4.72
19	11 37 5.13	0.787	4 8 40.2	4.65	19 9 44.8	11 36 57.50	0.776	4 9 25.2	4.56
20	11 36 46.51	0.764	4 10 29.8	4.49	20 9 40.6	11 36 39.16	0.753	4 11 12.9	4.40
21	11 36 28.44	0.741	4 12 15.5	4.33	21 9 36.4	11 36 21.37	0.730	4 12 56.7	4.24
22	11 36 10.93	0.717	4 13 57.3	4.16	22 9 32.2	11 36 4.14	0.706	4 14 36.6	4.08
23	11 35 54.00	0.693	4 15 35.1	3.99	23 9 28.0	11 35 47.49	0.682	4 16 12.5	3.91
24	11 35 37.65	0.669	4 17 8.8	3.82	24 9 23.8	11 35 31.42	0.658	4 17 44.4	3.74
25	11 35 21.89	0.644	4 18 38.5	3.65	25 9 19.6	11 35 15.94	0.633	4 19 12.2	3.57
26	11 35 6.73	0.619	4 20 4.1	3.48	26 9 15.4	11 35 1.05	0.608	4 20 36.0	3.40
27	11 34 52.18	0.594	4 21 25 5	3.31	27 9 11.2	11 34 46.77	0.583	4 21 55.6	3.23
28	11 34 38.23	0.568	4 22 42.8	3.14	28 9 7.1	11 34 33.09	0.557	4 23 11.1	3.06
29	11 34 24.90	0.542	4 23 55.9	2.97	29 9 2.9	11 34 20.03	0.531	4 24 22.4	2.89
30	11 34 12.19	0.516	4 25 4.8	2.79	30 8 58.8	11 34 7.59	0.505	4 25 29.5	2.71
31	11 34 0.12	−0.490	+ 4 26 9.5	+ 2.61	31 8 54.7	11 33 55.79	−0.479	+ 4 26 32.4	+ 2.54

JUPITER, 1874.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1874.	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	11 34 0.12	-0.490	+ 4 26 9.5	+ 2.61	1 8 54.7	11 33 55.79	-0.479	+ 4 26 32.4	+ 2.54
2	11 33 48.67	0.464	4 27 9.9	2.43	2 8 50.6	11 33 44.61	0.453	4 27 31.1	2.36
3	11 33 37.86	0.437	4 28 6.1	2.25	3 8 46.5	11 33 34.07	0.426	4 28 25.6	2.18
4	11 33 27.69	0.410	4 28 58.0	2.07	4 8 42.4	11 33 24.16	0.399	4 29 15.8	2.00
5	11 33 18.17	0.383	4 29 45.5	1.89	5 8 38.3	11 33 14.90	0.372	4 30 1.6	1.82
6	11 33 9.29	0.356	4 30 28.7	1.70	6 8 34.2	11 33 6.28	0.345	4 30 43.1	1.64
7	11 33 1.06	0.329	4 31 7.6	1.52	7 8 30.1	11 32 58.30	0.318	4 31 20.3	1.46
8	11 32 53.49	0.302	4 31 42.1	1.34	8 8 26.0	11 32 50.98	0.291	4 31 53.2	1.28
9	11 32 46.59	0.274	4 32 12.2	1.16	9 8 22.0	11 32 44.33	0.264	4 32 21.7	1.10
10	11 32 40.34	0.247	4 32 38.0	0.98	10 8 18.0	11 32 38.33	0.237	4 32 45.9	0.92
11	11 32 34.76	0.219	4 32 59.4	0.80	11 8 14.0	11 32 32.99	0.209	4 33 5.7	0.74
12	11 32 29.85	0.191	4 33 16.4	0.62	12 8 10.0	11 32 28.32	0.181	4 33 21.2	0.56
13	11 32 25.60	0.163	4 33 29.1	0.44	13 8 6.0	11 32 24.31	0.153	4 33 32.4	0.38
14	11 32 22.03	0.135	4 33 37.3	0.26	14 8 2.0	11 32 20.98	0.125	4 33 39.1	0.20
15	11 32 19.13	0.107	4 33 41.1	+ 0.07	15 7 58.0	11 32 18.31	0.097	4 33 41.4	+ 0.02
16	11 32 16.90	0.079	4 33 40.5	- 0.12	16 7 54.1	11 32 16.31	0.069	4 33 39.4	- 0.17
17	11 32 15.35	0.051	4 33 35·6	0.30	17 7 50.1	11 32 14.98	0.041	4 33 33.0	0.36
18	11 32 14.46	-0.023	4 33 26.3	0.49	18 7 46.2	11 32 14.32	-0.013	4 33 22.3	0.54
19	11 32 14.25	+0.005	4 33 12.6	0.67	19 7 42.2	11 32 14.33	+0.015	4 33 7.2	0.72
20	11 32 14.71	0.033	4 32 54.5	0.85	20 7 38.3	11 32 15.00	0.042	4 32 47.8	0.90
21	11 32 15.84	0.061	4 32 32.0	1.03	21 7 34.4	11 32 16.34	0.070	4 32 24.0	1.08
22	11 32 17.64	0.089	4 32 5.2	1 21	22 7 30.5	11 32 18.34	0.098	4 31 55.9	1.26
23	11 32 20.11	0.117	4 31 34.1	1.39	23 7 26.6	11 32 21.01	0.125	4 31 23.6	1.44
24	11 32 23.24	0.145	4 30 58.7	1.57	24 7 22.7	11 32 24.33	0.152	4 30 47.0	1.61
25	11 32 27.02	0.172	4 30 19.0	1.75	25 7 18.8	11 32 28.31	0.179	4 30 6.1	1.79
26	11 32 31.47	0.199	4 29 35.1	1.92	26 7 15.0	11 32 32.94	0.206	4 29 21.0	1.97
27	11 32 36.57	0.226	4 28 47.0	2.09	27 7 11.1	11 32 38.22	0.233	4 28 31.8	2.14
28	11 32 42.32	0.253	4 27 54.7	2.26	28 7 7.3	11 32 44.14	0.260	4 27 38.4	2.31
29	11 32 48.71	0.280	4 26 58.3	2.43	29 7 3.5	11 32 50.71	0.287	4 26 40.9	2.48
30	11 32 55.75	0.307	4 25 57.8	2.60	30 6 59.7	11 32 57.92	0.314	4 25 39.4	2.65
31	11 33 3.43	0.334	4 24 53.2	2.77	31 6 55.9	11 33 5.76	0.340	4 24 33.8	2.82
June 1	11 33 11.73	0.360	4 23 44.5	2.94	1 6 52.1	11 33 14.23	0.366	4 23 24.2	2.99
2	11 33 20.67	0.386	4 22 31.8	3.11	2 6 48.3	11 33 23.32	0.392	4 22 10.5	3.16
3	11 33 30.23	0.412	4 21 15.1	3.28	3 6 44.5	11 33 33.03	0.418	4 20 52.8	3.32
4	11 33 40.42	0.438	4 19 54.4	3.45	4 6 40.7	11 33 43.36	0.444	4 19 31.2	3.48
5	11 33 51.23	0.464	4 18 29.8	3.61	5 6 36.9	11 33 54.31	0.469	4 18 5.7	3.64
6	11 34 2 65	0.490	4 17 1.2	3.77	6 6 33.2	11 34 5.87	0.495	4 16 36.3	3.81
7	11 34 14.69	0.515	4 15 28.7	3.93	7 6 29.5	11 34 18.05	0.520	4 15 3.0	3.97
8	11 34 27.34	0.540	4 13 52.3	4.09	8 6 25.8	11 34 30.83	0.545	4 13 25.8	4.13
9	11 34 40.60	0.565	4 12 12.1	4.25	9 6 22.1	11 34 44.21	0.570	4 11 44.8	4.29
10	11 34 54.45	0.590	4 10 28.0	4.41	10 6 18.4	11 34 58.19	0.595	4 10 0.6	4.45
11	11 35 8.90	0.615	4 8 40.1	4.57	11 6 14.7	11 35 12.76	0.620	4 8 11.4	4.61
12	11 35 23.94	0.640	4 6 48.4	4.73	12 6 11.0	11 35 27.91	0.644	4 6 19.0	4.76
13	11 35 39.57	0.664	4 4 53.0	4.89	13 6 7.3	11 35 43.65	0.668	4 4 22.9	4.91
14	11 35 55.79	0.688	4 2 54.0	5.04	14 6 3.7	11 35 59.98	0.692	4 2 23.2	5.06
15	11 36 12.59	0.712	4 0 51.2	5.19	15 6 0.1	11 36 16.88	0.716	4 0 19.9	5.21
16	11 36 29.96	0.736	3 58 44.8	5.34	16 5 56.4	11 36 34.34	0.740	3 58 12.9	5.36
17	11 36 47.89	0.759	3 56 34.8	5.49	17 5 52.8	11 36 52.36	0.763	3 56 2.4	5.51
18	11 37 6.38	0.782	3 54 21.2	5.64	18 5 49.2	11 37 10.94	0.786	3 53 48.3	5.66
19	11 37 25.43	0.805	3 52 4.1	5.79	19 5 45.6	11 37 30.08	0.809	3 51 30.7	5.81
20	11 37 45.03	0.828	3 49 43.5	5.93	20 5 42.0	11 37 49.76	0.832	3 49 9.7	5.95
21	11 38 5.17	0.851	3 47 19.5	6.07	21 5 38.4	11 38 9.98	0.854	3 46 45.3	6.09
22	11 38 25.85	0.873	3 44 52.2	6.21	22 5 34.8	11 38 30.73	0.876	3 44 17.5	6.23
23	11 38 47.06	0.895	3 42 21.4	6.35	23 5 31.2	11 38 52.01	0.898	3 41 46.3	6.37
24	11 39 8.79	0.917	3 39 47.3	6.49	24 5 27.6	11 39 13.80	0.919	3 39 11.8	6.51
25	11 39 31.04	0.938	3 37 10.0	6.63	25 5 24.0	11 39 36.11	0.940	3 36 34.1	6.64
26	11 39 53.79	0.959	3 34 29.4	6.76	26 5 20.5	11 39 58.92	0.961	3 33 53.2	6.77
27	11 40 17.05	0.980	3 31 45.6	6.89	27 5 17.0	11 40 22.24	0.982	3 31 9.1	6.90
28	11 40 40.81	1.001	3 28 58.6	7.02	28 5 13.4	11 40 46.05	1.003	3 28 21.8	7.03
29	11 41 5.06	1.021	3 26 8.5	7.15	29 5 9.9	11 41 10.35	1.023	3 25 31.5	7.16
30	11 41 29.80	1.041	3 23 15.4	7.28	30 5 6.4	11 41 35.13	1.043	3 22 38.2	7.29
31	11 41 55.03	+1.061	+ 3 20 19.2	- 7.41	31 5 2.9	11 42 0.40	+1.063	+ 3 19 41.8	- 7.42

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	11 41 55.03	+1.061	+ 3 20 19.2	- 7.41	1 5 2.9	11 42 0.40	+1.063	+ 3 19 41.8	- 7.42
2	11 42 20.74	1.081	3 17 20.0	7.54	2 4 59.4	11 42 26.14	1.082	3 16 42.4	7.54
3	11 42 46.91	1.100	3 14 17.9	7.66	3 4 55.9	11 42 52.34	1.101	3 13 40.0	7.66
4	11 43 13.54	1.119	3 11 12.8	7.78	4 4 52.4	11 43 19.00	1.120	3 10 34.8	7.78
5	11 43 40.64	1.138	3 8 4.8	7.90	5 4 48.9	11 43 46.13	1.139	3 7 26.7	7.90
6	11 44 8.20	1.157	3 4 53.9	8.02	6 4 45.4	11 44 13.71	1.158	3 4 15.7	8.02
7	11 44 36.21	1.176	3 1 40.1	8.14	7 4 41.9	11 44 41.74	1.177	3 1 1.8	8.14
8	11 45 4.66	1.195	2 58 23.6	8.25	8 4 38.5	11 45 10.21	1.195	2 57 45.2	8.26
9	11 45 33.56	1.213	2 55 4.3	8.37	9 4 35.1	11 45 39.13	1.213	2 54 25.9	8.37
10	11 46 2.89	1.231	2 51 42.2	8.48	10 4 31.6	11 46 8.47	1.231	2 51 3.8	8.48
11	11 46 32.65	1.249	2 48 17.4	8.59	11 4 28.1	11 46 38.24	1.249	2 47 39.0	8.59
12	11 47 2.84	1.267	2 44 49.9	8.70	12 4 24.7	11 47 8.44	1.267	2 44 11.5	8.70
13	11 47 33.45	1.284	2 41 19.8	8.81	13 4 21.3	11 47 39.05	1.284	2 40 41.4	8.81
14	11 48 4.47	1.301	2 37 47.1	8.92	14 4 17.9	11 48 10.07	1.301	2 37 8.7	8.92
15	11 48 35.90	1.318	2 34 11.8	9.03	15 4 14.5	11 48 41.50	1.318	2 33 33.5	9.02
16	11 49 7.73	1.335	2 30 34.0	9.13	16 4 11.1	11 49 13.32	1.334	2 29 55.8	9.12
17	11 49 39.96	1.351	2 26 53.7	9.23	17 4 7.7	11 49 45.54	1.350	2 26 15.6	9.22
18	11 50 12.58	1.367	2 23 11.0	9.33	18 4 4.3	11 50 18.15	1.366	2 22 33.0	9.32
19	11 50 45.58	1.383	2 19 25.9	9.43	19 4 0.9	11 50 51.14	1.382	2 18 48.0	9.42
20	11 51 18.96	1.399	2 15 38.4	9.53	20 3 57.5	11 51 24.50	1.398	2 15 0.6	9.52
21	11 51 52.71	1.414	2 11 48.6	9.63	21 3 54.1	11 51 58.23	1.413	2 11 11.0	9.62
22	11 52 26.82	1.429	2 7 56.5	9.72	22 3 50.7	11 52 32.32	1.428	2 7 19.1	9.71
23	11 53 1.29	1.444	2 4 2.2	9.81	23 3 47.3	11 53 6.77	1.443	2 3 25.0	9.80
24	11 53 36.12	1.458	2 0 5.7	9.90	24 3 44.0	11 53 41.57	1.458	1 59 28.7	9.89
25	11 54 11.29	1.472	1 56 7.1	9.99	25 3 40.7	11 54 16.71	1.472	1 55 30.3	9.98
26	11 54 46.80	1.486	1 52 6.4	10.08	26 3 37.3	11 54 52.19	1.486	1 51 29.8	10.07
27	11 55 22.65	1.500	1 48 3.6	10.17	27 3 34.0	11 55 28.01	1.500	1 47 27.3	10.15
28	11 55 58.83	1.514	1 43 58.7	10.25	28 3 30.7	11 56 4.16	1.514	1 43 22.7	10.24
29	11 56 35.34	1.528	1 39 51.8	10.33	29 3 27.4	11 56 40.63	1.527	1 39 16.1	10.32
30	11 57 12.17	1.541	1 35 42.9	10.41	30 3 24.1	11 57 17.42	1.540	1 35 7.5	10.40
31	11 57 49.32	1.554	1 31 32.1	10.49	31 3 20.8	11 57 54.53	1.553	1 30 57.0	10.48
Aug. 1	11 58 26.78	1.567	1 27 19.4	10.57	1 3 17.5	11 58 31.95	1.566	1 26 44.6	10.56
2	11 59 4.55	1.580	1 23 4.8	10.65	2 3 14.2	11 59 9.67	1.579	1 22 30.3	10.64
3	11 59 42.62	1.593	1 18 48.3	10.73	3 3 10.9	11 59 47.69	1.591	1 18 14.1	10.71
4	12 0 20.99	1.605	1 14 30.0	10.80	4 3 7.6	12 0 26.01	1.603	1 13 56.2	10.78
5	12 0 59.66	1.617	1 10 10.0	10.87	5 3 4.3	12 1 4.63	1.615	1 9 36.6	10.86
6	12 1 38.61	1.629	1 5 48.2	10.94	6 3 1.0	12 1 43.54	1.627	1 5 15.2	10.93
7	12 2 17.85	1.641	1 1 24.6	11.01	7 2 57.7	12 2 22.72	1.639	1 0 52.0	11.00
8	12 2 57.37	1.653	0 56 59.4	11.08	8 2 54.4	12 3 2.18	1.650	0 56 27.2	11.07
9	12 3 37.17	1.664	0 52 32.5	11.15	9 2 51.1	12 3 41.92	1.661	0 52 0.7	11.14
10	12 4 17.24	1.675	0 48 3.9	11.22	10 2 47.9	12 4 21.93	1.672	0 47 32.5	11.21
11	12 4 57.58	1.686	0 43 33.7	11.29	11 2 44.6	12 5 2.21	1.683	0 43 2.7	11.27
12	12 5 38.18	1.697	0 39 2.0	11.35	12 2 41.4	12 5 42.75	1.694	0 38 31.4	11.33
13	12 6 19.04	1.708	0 34 28.8	11.41	13 2 38.1	12 6 23.55	1.705	0 33 58.7	11.39
14	12 7 0.15	1.718	0 29 54.2	11.47	14 2 34.9	12 7 4.59	1.715	0 29 24.5	11.45
15	12 7 41.51	1.728	0 25 18.1	11.53	15 2 31.6	12 7 45.88	1.725	0 24 48.9	11.51
16	12 8 23.11	1.738	0 20 40.6	11.59	16 2 28.3	12 8 27.41	1.735	0 20 11.9	11.57
17	12 9 4.93	1.748	0 16 1.7	11.65	17 2 25.1	12 9 9.16	1.745	0 15 33.5	11.63
18	12 9 46.98	1.757	0 11 21.5	11.71	18 2 21.9	12 9 51.14	1.754	0 10 53.8	11.68
19	12 10 29.26	1.766	0 6 40.0	11.76	19 2 18.6	12 10 33.35	1.763	0 6 12.8	11.73
20	12 11 11.76	1.775	+ 0 1 57.3	11.81	20 2 15.4	12 11 15.78	1.772	+ 0 1 30.6	11.78
21	12 11 54.47	1.784	- 0 2 46.5	11.86	21 2 12.2	12 11 58.41	1.781	- 0 3 12.8	11.83
22	12 12 37.39	1.793	0 7 31.6	11.91	22 2 9.0	12 12 41.25	1.790	0 7 57.3	11.88
23	12 13 20.52	1.801	0 12 17.9	11.96	23 2 5.8	12 13 24.30	1.798	0 12 43.0	11.92
24	12 14 3.85	1.809	0 17 5.3	12.00	24 2 2.6	12 14 7.55	1.806	0 17 29.8	11.96
25	12 14 47.37	1.817	0 21 53.7	12.04	25 1 59.4	12 14 50.99	1.814	0 22 17.7	12.01
26	12 15 31.09	1.825	0 26 43.1	12.08	26 1 56.2	12 15 34.63	1.822	0 27 6.6	12.06
27	12 16 15.00	1.833	0 31 33.6	12.12	27 1 53.0	12 16 18.46	1.830	0 31 56.5	12.10
28	12 16 59.10	1.841	0 36 25.0	12.16	28 1 49.8	12 17 2.47	1.837	0 36 47.3	12.14
29	12 17 43.37	1.848	0 41 17.4	12.20	29 1 46.6	12 17 46.66	1.845	0 41 39.1	12.18
30	12 18 27.82	1.855	0 46 10.7	12.24	30 1 43.4	12 18 31.02	1.852	0 46 31.8	12.22
31	12 19 12.45	+1.862	- 0 51 4.9	-12.28	31 1 40.2	12 19 15.56	+1.859	- 0 51 25.4	-12.26

JUPITER, 1874.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1874.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	12 19 57.25	+1.869	– 0 56 0.0	–12.31	1 1 37.0	12 20 0.27	+1.866	– 0 56 19.9	–12.29
2	12 20 42.19	1.876	1 0 55.8	12.34	2 1 33.8	12 20 45.12	1.873	1 1 15.1	12.32
3	12 21 27.31	1.883	1 5 52 5	12.37	3 1 30.6	12 21 30.15	1.880	1 6 11.2	12.35
4	12 22 12.59	1.890	1 10 50.0	12.40	4 1 27.4	12 22 15.34	1.886	1 11 8.1	12.38
5	12 22 58.02	1.896	1 15 48.2	12.43	5 1 24.2	12 23 0.68	1.892	1 16 5.7	12.41
6	12 23 43.59	1.902	1 20 47.1	12.46	6 1 21.0	12 23 46.16	1.898	1 21 3.9	12.44
7	12 24 29.31	1.908	1 25 46.6	12.49	7 1 17.9	12 24 31.79	1.904	1 26 2.8	12.47
8	12 25 15.17	1.914	1 30 46.8	12.52	8 1 14.7	12 25 17.56	1.910	1 31 2.4	12.50
9	12 26 1.17	1.920	1 35 47.6	12.54	9 1 11.5	12 26 3.47	1.915	1 36 2.6	12.52
10	12 26 48.30	1.925	1 40 49.0	12.56	10 1 8.3	12 26 50.50	1.921	1 41 3.5	12.54
11	12 27 33.55	1.930	1 45 51.0	12.58	11 1 5.2	12 27 35.65	1.926	1 46 4.7	12.56
12	12 28 19.92	1.935	1 50 53.4	12.60	12 1 2.0	12 28 21.92	1.931	1 51 6.5	12.58
13	12 29 6.41	1.940	1 55 56.3	12.62	13 0 58.9	12 29 8.31	1.936	1 56 8.7	12.60
14	12 29 53.02	1.944	2 0 59.5	12.64	14 0 55.7	12 29 54.82	1.941	2 1 11.3	12.62
15	12 30 39.73	1.948	2 6 3.2	12.66	15 0 52.6	12 30 41.44	1.945	2 6 14.3	12.64
16	12 31 26.54	1.952	2 11 7.2	12.68	16 0 49.4	12 31 28.15	1.949	2 11 17.7	12.65
17	12 32 13.45	1.956	2 16 11.5	12.69	17 0 46.3	12 32 14.96	1.953	2 16 21.4	12.66
18	12 33 0.45	1.960	2 21 16.1	12.70	18 0 43.1	12 33 1.86	1.957	2 21 25.3	12.67
19	12 33 47.54	1.964	2 26 20.9	12.71	19 0 40.0	12 33 48.85	1.960	2 26 29.4	12.68
20	12 34 34.71	1.968	2 31 25.9	12.71	20 0 36.8	12 34 35.92	1.963	2 31 33.8	12.69
21	12 35 21.97	1.971	2 36 31.0	12.72	21 0 33.7	12 35 23.07	1.966	2 36 38.3	12.69
22	12 36 9.30	1.974	2 41 36.3	12.72	22 0 30.5	12 36 10.30	1.969	2 41 42.9	12.69
23	12 36 56.70	1.977	2 46 41.7	12.73	23 0 27.4	12 36 57.60	1.972	2 46 47.6	12.70
24	12 37 44.17	1.980	2 51 47.2	12.73	24 0 24.2	12 37 44.97	1.975	2 51 52.4	12.70
25	12 38 31.70	1.983	2 56 52.7	12.73	25 0 21.1	12 38 32.40	1.977	2 56 57.2	12.70
26	12 39 19.29	1.985	3 1 58.2	12.73	26 0 17.9	12 39 19.89	1.980	3 2 2.0	12.70
27	12 40 6.94	1.987	3 7 3.7	12.73	27 0 14.8	12 40 7.43	1.982	3 7 6.8	12.70
28	12 40 54.64	1.989	3 12 9.2	12.73	28 0 11.6	12 40 55.03	1.984	3 12 11.6	12.70
29	12 41 42.39	1.991	3 17 14.6	12.72	29 0 8.5	12 41 42.68	1.986	3 17 16.4	12.70
30	12 42 30.19	1.993	3 22 19.9	12.72	30 0 5.4	12 42 30.37	1.988	3 22 21.1	12.69
Oct. 1	12 43 18.03	1.995	3 27 25.1	12.71	1 0 2.3	12 43 18.10	1.990	3 27 25.6	12.69
					1 23 59.2	12 44 5.88	1.991	3 32 30.0	12.68
2	12 44 5.91	1.996	3 32 30.2	12.71	2 23 56.0	12 44 53.69	1.992	3 37 34.2	12.67
3	12 44 53.82	1.997	3 37 35.0	12.70	3 23 52.9	12 45 41.52	1.993	3 42 38.1	12.66
4	12 45 41.77	1.998	3 42 39.6	12.69	4 23 49.7	12 46 29.39	1.994	3 47 41.8	12.65
5	12 46 29.74	1.999	3 47 44.0	12.68	5 23 46.6	12 47 17.28	1.995	3 52 45.2	12.64
6	12 47 17.73	2.000	3 52 48.1	12.67	6 23 43.4	12 48 5.18	1.996	3 57 48.3	12.62
7	12 48 5.73	2.000	3 57 51.8	12.65	7 23 40.3	12 48 53.09	1.996	4 2 51.1	12.61
8	12 48 53.75	2.001	4 2 55.2	12.63	8 23 37.1	12 49 41.00	1.996	4 7 53.4	12.59
9	12 49 41.77	2.001	4 7 58.2	12.61	9 23 34.0	12 50 28.92	1.996	4 12 55.3	12.57
10	12 50 29.80	2.001	4 13 0.7	12.59	10 23 30.8	12 51 16.84	1.996	4 17 56.7	12.55
11	12 51 17.82	2.000	4 18 2.8	12.57	11 23 27.7	12 52 4.75	1.995	4 22 57.6	12.53
12	12 52 5.82	2.000	4 23 4.3	12.54	12 23 24.6	12 52 52.63	1.994	4 27 57.9	12.51
13	12 52 53.81	1.999	4 28 5.3	12.52	13 23 21.5	12 53 40.50	1.993	4 32 57.7	12.48
14	12 53 41.78	1.998	4 33 5.7	12.50	14 23 18.3	12 54 28.34	1.992	4 37 56.8	12.45
15	12 54 29.72	1.997	4 38 5.5	12.47	15 23 15.2	12 55 16.14	1.991	4 42 55.3	12.42
16	12 55 17.63	1.996	4 43 4.6	12.44	16 23 12.1	12 56 3.91	1.990	4 47 53.1	12.39
17	12 56 5.51	1.995	4 48 3.0	12.41	17 23 8.9	12 56 51.65	1.988	4 52 50.2	12.36
18	12 56 53.36	1.993	4 53 0.7	12.38	18 23 5.8	12 57 39.35	1.986	4 57 46.5	12.33
19	12 57 41.17	1.991	4 57 57.6	12.35	19 23 2.7	12 58 27.00	1.984	5 2 42.0	12.30
20	12 58 28.92	1.989	5 2 53.7	12.32	20 22 59.6	12 59 14.59	1.982	5 7 36.7	12.27
21	12 59 16.60	1.987	5 7 49.1	12.29	21 22 56.4	13 0 2.12	1.980	5 12 30.6	12.23
22	13 0 4.23	1.984	5 12 43.6	12.26	22 22 53.3	13 0 49.59	1.977	5 17 23.6	12.19
23	13 0 51.81	1.981	5 17 37.2	12.22	23 22 50.1	13 1 37.00	1.974	5 22 15.7	12.15
24	13 1 39.33	1.979	5 22 29.9	12.18	24 22 47.0	13 2 24.36	1.971	5 27 6.8	12.11
25	13 2 26.78	1.976	5 27 21.6	12.14	25 22 43.8	13 3 11.64	1.968	5 31 57.0	12.07
26	13 3 14.15	1.973	5 32 12.4	12.10	26 22 40.7	13 3 58.83	1.965	5 36 46.2	12.03
27	13 4 1.45	1.969	5 37 2.2	12.06	27 22 37.5	13 4 45.94	1.961	5 41 34.4	11.99
28	13 4 48.66	1.965	5 41 50.9	12.01	28 22 34.4	13 5 32.97	1.957	5 46 21.5	11.95
29	13 5 35.78	1.961	5 46 38.6	11.97	29 22 31.2	13 6 19.91	1.953	5 51 7.6	11.90
30	13 6 22.81	1.957	5 51 25.2	11.92	30 22 28.1	13 7 6.75	1.949	5 55 52.5	11.85
31	13 7 9.74	+1.953	– 5 56 10.7	–11.87	31 22 24.9	13 7 53.48	+1.945	– 6 0 36.3	–11.80

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	13 7 56.56	+1.949	− 6 0 55.1	−11.82	1 22 21.8	13 8 40.10	+1.941	− 6 5 19.0	−11.75
2	13 8 43.29	1.945	6 5 38.3	11.77	2 22 18.6	13 9 26.62	1.936	6 10 0.5	11.70
3	13 9 29.90	1.940	6 10 20.3	11.72	3 22 15.5	13 10 13.02	1.931	6 14 40.7	11.65
4	13 10 16.39	1.935	6 15 1.0	11.67	4 22 12.3	13 10 59.29	1.926	6 19 19.6	11.60
5	13 11 2.77	1.930	6 19 40.4	11.61	5 22 9.1	13 11 45.47	1.920	6 23 57.1	11.54
6	13 11 49.03	1.925	6 24 18.5	11.56	6 22 5.9	13 12 31.49	1.914	6 28 33.3	11.48
7	13 12 35.14	1.919	6 28 55.2	11.50	7 22 2.8	13 13 17.37	1.908	6 33 8.1	11.42
8	13 13 21.10	1.913	6 33 30.5	11.44	8 21 59.6	13 14 3.09	1.902	6 37 41.5	11.36
9	13 14 6.91	1.907	6 38 4.4	11.38	9 21 56.4	13 14 48.66	1.895	6 42 13.5	11.30
10	13 14 52.57	1.900	6 42 36.8	11.32	10 21 53.2	13 15 34.07	1.888	6 46 43.9	11.24
11	13 15 38.07	1.893	6 47 7.7	11.26	11 21 50.1	13 16 19.32	1.881	6 51 12.8	11.17
12	13 16 23.41	1.886	6 51 37.0	11.19	12 21 46.9	13 17 4.40	1.874	6 55 40.1	11.11
13	13 17 8.58	1.879	6 56 4.7	11.12	13 21 43.7	13 17 49.31	1.867	7 0 [illegible].7	11.04
14	13 17 53.57	1.871	7 0 30.8	11 05	14 21 40.5	13 18 34.04	1.859	7 4 29.7	10.97
15	13 18 38.37	1.863	7 4 55.3	10.98	15 21 37.3	13 19 18.57	1.851	7 8 52.1	10.90
16	13 19 22.98	1.855	7 9 18 1	10.91	16 21 34.1	13 20 2.91	1.843	7 13 12.7	10.83
17	13 20 7.40	1.847	7 13 39.0	10.84	17 21 30.9	13 20 47.05	1.835	7 17 31.5	10.76
18	13 20 51.62	1.838	7 17 58.2	10.77	18 21 27.7	13 21 30.99	1.827	7 21 48.5	10.68
19	13 21 35.64	1.829	7 22 15.7	10.70	19 21 24.5	13 22 14.73	1.818	7 26 3.8	10.60
20	13 22 19.44	1.820	7 26 31.4	10.62	20 21 21.3	13 22 58.25	1.809	7 30 17.3	10.53
21	13 23 3.02	1.811	7 30 45.2	10.54	21 21 18.1	13 23 41.53	1.800	7 34 28.9	10.45
22	12 23 46.39	1.802	7 34 57.2	10.46	22 21 14.9	13 24 24.60	1.790	7 38 38.6	10.37
23	13 24 29.53	1.792	7 39 7.3	10.38	23 21 11.7	13 25 7.44	1.780	7 42 46.5	10.29
24	13 25 12.44	1.782	7 43 15.5	10.30	24 21 8.5	13 25 50.04	1.770	6 46 52.4	10.21
25	13 25 55.11	1.772	7 47 21.7	10.22	25 21 5.3	13 26 32.40	1.760	7 50 56.4	10.13
26	13 26 37.54	1.762	7 51 26.0	10.14	26 21 2.0	13 27 14.52	1.750	7 54 58.4	10.05
27	13 27 19.72	1.752	7 55 28.3	10.06	27 20 58.8	13 27 56.38	1.739	7 58 58.4	9.96
28	13 28 1.64	1.741	7 59 28.5	9.97	28 20 55.6	13 28 37.98	1.728	8 2 56.3	9.87
29	13 28 43.29	1.730	8 3 26.6	9.88	29 20 52.3	13 29 19.30	1.717	8 6 52.1	9.78
30	13 29 24.68	1.719	8 7 22.7	9.79	30 20 49.0	13 30 0.36	1.705	8 10 45.7	9.69
Dec. 1	13 30 5.79	1.707	8 11 16.6	9.70	1 20 45.8	13 30 41.13	1.693	8 14 37.2	9.60
2	13. 30 46.62	1.695	8 15 8.3	9.61	2 20 42.5	13 31 21.62	1.681	8 18 26.5	9.51
3	13 31 27.17	1.683	8 18 57.8	9.52	3 20 39.2	13 32 1.82	1.669	8 22 13.6	9.42
4	13 32 7.42	1.670	8 22 45.1	9.43	4 20 35.9	13 32 41.72	1.656	8 25 58.3	9.32
5	13 32 47.37	1.657	8 26 30.0	9.33	5 20 32.7	13 33 21.31	1.643	8 29 40.7	9.22
6	13 33 27.00	1.644	8 30 12.6	9.23	6 20 29.4	13 34 0.58	1.630	8 33 20.8	9.12
7	13 34 6.31	1.631	8 33 52.8	9.13	7 20 26.1	13 34 39.53	1.616	8 36 58.5	9.02
8	13 34 45.30	1.617	8 37 30.7	9.03	8 20 22.8	13 35 18.15	1.602	8 40 33.8	8.92
9	13 35 23.96	1.603	8 41 6.1	8.93	9 20 19.5	13 35 56.43	1.588	8 44 6.6	8.82
10	13 36 2.28	1.589	8 44 39.0	8.83	10 20 16.2	13 36 34.37	1.573	8 47 36.9	8.72
11	13 36 40.25	1.575	8 48 9.5	8.72	11 20 12.9	13 37 11.96	1.558	8 51 4.8	8.62
12	13 37 17.86	1.560	8 51 37.5	8.62	12 20 9.6	13 37 49.18	1.543	8 54 30.2	8.51
13	13 37 55.11	1.545	8 55 2.9	8.51	13 20 6.3	13 38 26.04	1.528	8 57 53.0	8.40
14	13 38 32.00	1.529	8 58 25.7	8.40	14 20 3.0	13 39 2.53	1.512	9 1 13.2	8.29
15	13 39 8.51	1.513	9 1 45.9	8.29	15 19 59.7	13 39 38.64	1.496	9 4 30.7	8.18
16	13 39 44.64	1.497	9 5 3.5	8.18	16 19 56.3	13 40 14.36	1.480	9 7 45.6	8.07
17	13 40 20.38	1.481	9 8 18.4	8.07	17 19 53.0	13 40 49.69	1.464	9 10 57.8	7.95
18	13 40 55.73	1.464	9 11 30.6	7.96	18 19 49.7	13 41 24.63	1.447	9 14 7.3	7.84
19	13 41 30.69	1.447	9 14 40.0	7.84	19 19 46.3	13 41 59.18	1.430	9 17 14.0	7.73
20	13 42 5.23	1.430	9 17 46.7	7.73	20 19 42.9	13 42 33.30	1.413	9 20 18.0	7.61
21	13 42 39.36	1.413	9 20 50.6	7.61	21 19 39.6	13 43 7.01	1.396	9 23 19.2	7.49
22	13 43 13.07	1.395	9 23 51.7	7.49	22 19 36.2	13 43 40.29	1.378	9 26 17.6	7.37
23	13 43 46.35	1.377	9 26 50.0	7.37	23 19 32.8	13 44 13.14	1.360	9 29 13.1	7.25
24	13 44 19.21	1.359	9 29 45.4	7.25	24 19 29.4	13 44 45.57	1.342	9 32 5.8	7.13
25	13 44 51.63	1.341	9 32 38.0	7.13	25 19 26.0	13 45 17.55	1.323	9 34 55.6	7.01
26	13 45 23.60	1.322	9 35 27.6	7.01	26 19 22.6	13 45 49.08	1.304	9 37 42.4	6.89
27	13 45 55.11	1.303	9 38 14.2	6.88	27 19 19.2	13 46 20.14	1.285	9 40 26.2	6.77
28	13 46 26.16	1.284	9 40 57.8	6.76	28 19 15.7	13 46 50.74	1.265	9 43 7.0	6.64
29	13 46 56.74	1.264	9 43 38.5	6.63	29 19 12.3	13 47 20.87	1.245	9 45 44.9	6.51
30	13 47 26.85	1.244	9 46 16.1	6.50	30 19 8.9	13 47 50.52	1.225	9 48 19.7	6.38
31	13 47 56.47	1.224	9 48 50.6	6.37	31 19 5.4	13 48 19.68	1.205	9 50 51.4	6.25
32	13 48 25.60	+1.203	− 9 51 22.1	− 6.24	32 19 1.9	13 48 48.35	+1.184	− 9 53 20.0	− 6.12

SATURN, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	20 18 56.40	+1.184	-20 6 20.8	+ 3.74	1 1 34.0	20 18 58.25	+1.181	-20 6 14.9	+ 3.73
2	20 19 24.86	1.188	20 4 50.7	3.77	2 1 30.5	20 19 26.65	1.185	20 4 45.0	3.76
3	20 19 53.42	1.192	20 3 20.0	3.79	3 1 27.1	20 19 55.15	1.190	20 3 14.5	3.78
4	20 20 22.08	1.196	20 1 48.8	3.81	4 1 23.6	20 20 23.75	1.194	20 1 43.5	3.80
5	20 20 50.83	1.200	20 0 17.0	3.84	5 1 20.2	20 20 52.44	1.197	20 0 11.9	3.83
6	20 21 19.67	1.203	19 58 44.6	3.86	6 1 16.7	20 21 21.21	1.200	19 58 39.7	3.85
7	20 21 48.59	1.207	19 57 11.7	3.88	7 1 13.3	20 21 50.06	1.204	19 57 7.0	3.88
8	20 22 17.59	1.210	19 55 38.2	3.91	8 1 9.8	20 22 18.99	1.207	19 55 33.7	3.90
9	20 22 46.66	1.212	19 54 4.2	3.93	9 1 6.4	20 22 48.00	1.210	19 53 59.9	3.92
10	20 23 15.79	1.215	19 52 29.7	3.95	10 1 2.9	20 23 17.07	1.213	19 52 25.6	3.94
11	20 23 44.99	1.218	19 50 54.6	3.97	11 0 59.5	20 23 46.20	1.215	19 50 50.7	3.96
12	20 24 14.25	1.220	19 49 19.0	3.99	12 0 56.0	20 24 15.39	1.217	19 49 15.3	3.98
13	20 24 43.56	1.222	19 47 43.0	4.01	13 0 52.6	20 24 44.63	1.219	19 47 39.5	4.00
14	20 25 12.92	1.224	−19 46 6.6	4.03	14 0 49.1	20 25 13.92	1.221	19 46 3.3	4.02
15	20 25 42.32	1.226	19 44 29.8	4.04	15 0 45.7	20 25 43.25	1.223	19 44 26.7	4.04
16	20 26 11.75	1.227	19 42 52.5	4.06	16 0 42.2	20 26 12.61	1.224	19 42 49.6	4.05
17	20 26 41.21	1.228	19 41 14.8	4.08	17 0 38.8	20 26 42.00	1.225	19 41 12.1	4.07
18	20 27 10.70	1.229	19 39 36.7	4.09	18 0 35.3	20 27 11.42	1.226	19 39 34.3	4.08
19	20 27 40.22	1.231	19 37 58.3	4.11	19 0 31.9	20 27 40.87	1.228	19 37 56.1	4.10
20	20 28 9.77	1.232	19 36 19.6	4.12	20 0 28.5	20 28 10.35	1.229	19 36 17.6	4.11
21	20 28 39.34	1.232	19 34 40.5	4.14	21 0 25.0	20 28 39.85	1.229	19 34 38.8	4.12
22	20 29 8.91	1.232	19 33 1.1	4.15	22 0 21.6	20 29 9.35	1.229	19 32 59.6	4.14
23	20 29 38.47	1.231	19 31 21.4	4.16	23 0 18.1	20 29 38.84	1.229	19 31 20.1	4.15
24	20 30 8.02	1.231	19 29 41.4	4.17	24 0 14.7	20 30 8.32	1.228	19 29 40.4	4.16
25	20 30 37.56	1.231	19 28 1.2	4.18	25 0 11.2	20 30 37.79	1.228	19 28 0.4	4.17
26	20 31 7.09	1.230	19 26 20.7	4.19	26 0 7.8	20 31 7.25	1.227	19 26 20.2	4.18
27	20 31 36.60	1.229	19 24 40.0	4.20	27 0 4.4	20 31 36.69	1.226	19 24 39.7	4.19
28	20 32 6.09	1.228	19 22 59.1	4.21	28 0 0.9	20 32 6.11	1.225	19 22 59.0	4.20
					28 23 57.5	20 32 35.51	1.224	19 21 18.2	4.20
29	20 32 35.56	1.227	19 21 18.0	4.21	29 23 54.0	20 33 4.88	1.223	19 19 37.2	4.21
30	20 33 5.00	1.226	19 19 36.8	4.22	30 23 50.6	20 33 34.21	1.221	19 17 56.1	4.22
31	20 33 34.40	1.224	19 17 55.4	4.23	31 23 47.2	20 34 3.50	1.219	19 16 14.8	4.22
Feb. 1	20 34 3.76	1.222	19 16 13.9	4.23	1 23 43.7	20 34 32.74	1.218	19 14 33.4	4.23
2	20 34 33.07	1.220	19 14 32.3	4.24	2 23 40.3	20 35 1.94	1.216	19 12 51.9	4.23
3	20 35 2.34	1.219	19 12 50.6	4.24	3 23 36.8	20 35 31.09	1.213	19 11 10.3	4.24
4	20 35 31.56	1.216	19 11 8.8	4.25	4 23 33.4	20 36 0.18	1.211	19 9 28.6	4.24
5	20 36 0.72	1.214	19 9 26.8	4.25	5 23 29.9	20 36 29.21	1.208	19 7 46.9	4.24
6	20 36 29.82	1.211	19 7 44.8	4.25	6 23 26.5	20 36 58.18	1.206	19 6 5.2	4.24
7	20 36 58.85	1.208	19 6 2.8	4.25	7 23 23.0	20 37 27.08	1.203	19 4 23.5	4.24
8	20 37 27.81	1.205	19 4 20.9	4.25	8 23 19.6	20 37 55.90	1.199	19 2 41.9	4.23
9	20 37 56.70	1.202	19 2 39.0	4.24	9 23 16.1	20 38 24.64	1.196	19 1 0.3	4.23
10	20 38 25.51	1.199	19 0 57.2	4.24	10 23 12.7	20 38 53.29	1.192	18 59 18.7	4.23
11	20 38 54.23	1.195	18 59 15.4	4.24	11 23 9.2	20 39 21.86	1.189	18 57 37.2	4.23
12	20 39 22.86	1.191	18 57 33.7	4.24	12 23 5.7	20 39 50.34	1.185	18 55 55.8	4.22
13	20 39 51.40	1.187	18 55 52.0	4.24	13 23 2.3	20 40 18.72	1.180	18 54 14.4	4.22
14	20 40 19.84	1.183	18 54 10.4	4.23	14 22 58.8	20 40 46.99	1.176	18 52 33.2	4.21
15	20 40 48.18	1.179	18 52 28.9	4.23	15 22 55.4	20 41 15.15	1.171	18 50 52.1	4.21
16	20 41 16.41	1.174	18 50 47.6	4.22	16 22 51.9	20 41 43.19	1.166	18 49 11.2	4.20
17	20 41 44.52	1.169	18 49 6.5	4.21	17 22 48.4	20 42 11.12	1.161	18 47 30.6	4.19
18	20 42 12.51	1.164	18 47 25.6	4.20	18 22 45.0	20 42 38.93	1.156	18 45 50.2	4.18
19	20 42 40.38	1.159	18 45 45.0	4.19	19 22 41.5	20 43 6.62	1.151	18 44 10.1	4.17
20	20 43 8.13	1.154	18 44 4.6	4.18	20 22 38.0	20 43 34.18	1.146	18 42 30.2	4.16
21	20 43 35.75	1.148	18 42 24.5	4.16	21 22 34.5	20 44 1.61	1·140	18 40 50.6	4.14
22	20 44 3.23	1.142	18 40 44.7	4.15	22 22 31.1	20 44 28.89	1.134	18 39 11.3	4.13
23	20 44 30.57	1.136	18 39 5.2	4.14	23 22 27.6	20 44 56.02	1.127	18 37 32.4	4.11
24	20 44 57.76	1.130	18 37 26.0	4.12	24 22 24.1	20 45 23.00	1.121	18 35 53.8	4.10
25	20 45 24.79	1.123	18 35 47.2	4.11	25 22 20.6	20 45 49.82	1.114	18 34 15.6	4.08
26	20 45 51.67	1.117	18 34 8.8	4.09	26 22 17.1	20 46 16.49	1.108	18 32 37.8	4.07
27	20 46 18.40	1.110	18 32 30.8	4.07	27 22 13.6	20 46 43.01	1.101	18 31 0.4	4.05
28	20 46 44.97	1.104	18 30 53.2	4.06	28 22 10.1	20 47 9.36	1.094	18 29 23.4	4.03
29	20 47 11.37	1.096	18 29 16.0	4.04	29 22 6.6	20 47 35.54	1.087	18 27 46.9	4.01
30	20·47 37.60	+1.089	-18 27 39.3	+ 4.02	30 22 3.1	20 48 1.55	+1.080	-18 26 10.9	+ 3.99

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	20 47 11.37	+1.096	-18 29 16.0	+ 4.04	1 22 6.6	20 47 35.54	+1.087	-18 27 46.9	+ 4.01
2	20 47 37.60	1.089	18 27 39.3	4.02	2 22 3.1	20 48 1.55	1.080	18 26 10.9	3.99
3	20 48 3.66	1.082	18 26 3.1	4.00	3 21 59.6	20 48 27.39	1.073	18 24 35.4	3.97
4	20 48 29.54	1.075	18 24 27.4	3.98	4 21 56.1	20 48 53.05	1.065	18 23 0.4	3.95
5	20 48 55.24	1.067	18 22 52.2	3.96	5 21 52.6	20 49 18.52	1.057	18 21 25.9	3.93
6	20 49 20.76	1.059	18 21 17.5	3.93	6 21 49.1	20 49 43.80	1.049	18 19 52.0	3.90
7	20 49 46.09	1.051	18 19 43.4	3.91	7 21 45.6	20 50 8.89	1.041	18 18 18.6	3.88
8	20 50 11.23	1.043	18 18 9.9	3.88	8 21 42.1	20 50 33.79	1.033	18 16 45.8	3.85
9	20 50 36.17	1.035	18 16 37.0	3.86	9 21 38.6	20 50 58.49	1.025	18 15 13.7	3.82
10	20 51 0.91	1.026	18 15 4.7	3.83	10 21 35.0	20 51 22.98	1.016	18 13 42.3	3.79
11	20 51 25.44	1.018	18 13 33.1	3.80	11 21 31.5	20 51 47.26	1.007	18 12 11.6	3.77
12	20 51 49.76	1.009	18 12 2.2	3.77	12 21 28.0	20 52 11.32	0.998	18 10 41.5	3.74
13	20 52 13.86	1.000	18 10 32.0	3.74	13 21 24.4	20 52 35.17	0.989	18 9 12.1	3.71
14	20 52 37.75	0.991	18 9 2.5	3.71	14 21 20.9	20 52 58.81	0.980	18 7 43.5	3.68
15	20 53 1.42	0.982	18 7 33.7	3.68	15 21 17.3	20 53 22.23	0.971	18 6 15.6	3.65
16	20 53 24.87	0.972	18 6 5.7	3.65	16 21 13.8	20 53 45.42	0.961	18 4 48.4	3.62
17	20 53 48.09	0.962	18 4 38.4	3.62	17 21 10.2	20 54 8.37	0.951	18 3 22.0	3.58
18	20 54 11.07	0.952	18 3 11.9	3.59	18 21 6.7	20 54 31.08	0.941	18 1 56.5	3.54
19	20 54 33.81	0.942	18 1 46.3	3.55	19 21 3.1	20 54 53.54	0.931	18 0 31.9	3.51
20	20 54 56.30	0.932	18 0 21.6	3.51	20 20 59.6	20 55 15.75	0.920	17 59 8.2	3.47
21	20 55 18.53	0.921	17 58 57.8	3.47	21 20 56.0	20 55 37.71	0.910	17 57 45.4	3.43
22	20 55 40.51	0.911	17 57 34.9	3.43	22 20 52.4	20 55 59.42	0.899	17 56 23.6	3.39
23	20 56 2.24	0.900	17 56 13.0	3.39	23 20 48.9	20 56 20.87	0.888	17 55 2.7	3.35
24	20 56 23.71	0.889	17 54 52.0	3.36	24 20 45.3	20 56 42.06	0.877	17 53 42.7	3.31
25	20 56 44.92	0.878	17 53 31.9	3.32	25 20 41.7	20 57 2.99	0.867	17 52 23.7	3.27
26	20 57 5.86	0.867	17 52 12.8	3.28	26 20 38.1	20 57 23.66	0.856	17 51 5.6	3.23
27	20 57 26.54	0.856	17 50 54.7	3.23	27 20 34.5	20 57 44.06	0.844	17 49 48.5	3.19
28	20 57 46.95	0.845	17 49 37.6	3.19	28 20 30.9	20 58 4.18	0.832	17 48 32.5	3.14
29	20 58 7.08	0.833	17 48 21.6	3.14	29 20 27.3	20 58 24.02	0.821	17 47 17.6	3.10
30	20 58 26.93	0.821	17 47 6.7	3.10	30 20 23.7	20 58 43.57	0.809	17 46 3.8	3.05
31	20 58 46.49	0.809	17 45 52.9	3.05	31 20 20.1	20 59 2.84	0.797	17 44 51.1	3.00
Apr. 1	20 59 5.76	0.797	17 44 40.2	3.01	1 20 16.5	20 59 21.82	0.785	17 43 39.6	2.96
2	20 59 24.75	0.785	17 43 28.6	2.96	2 20 12.9	20 59 40.52	0.773	17 42 29.2	2.91
3	20 59 43.45	0.773	17 42 18.1	2.91	3 20 9.2	20 59 58.93	0.761	17 41 19.9	2.86
4	21 0 1.86	0.761	17 41 8.8	2.86	4 20 5.6	21 0 17.04	0.748	17 40 11.7	2.82
5	21 0 19.97	0.748	17 40 0.7	2.81	5 20 2.0	21 0 34.85	0.736	17 39 4.7	2.76
6	21 0 37.77	0.735	17 38 53.8	2.76	6 19 58.3	21 0 52.36	0.723	17 37 59.0	2.71
7	21 0 55.27	0.723	17 37 48.1	2.71	7 19 54.7	21 1 9.56	0.710	17 36 54.6	2.66
8	21 1 12.46	0.710	17 36 43.7	2.66	8 19 51.0	21 1 26.45	0.697	17 35 51.4	2.61
9	21 1 29.34	0.697	17 35 40.5	2.61	9 19 47.4	21 1 43.03	0.684	17 34 49.4	2.56
10	21 1 45.90	0.684	17 34 38.6	2.55	10 19 43.7	21 1 59.29	0.671	17 33 48.7	2.50
11	21 2 2.15	0.670	17 33 38.0	2.50	11 19 40.1	21 2 15.23	0.657	17 32 49.3	2.45
12	21 2 18.08	0.657	17 32 38.7	2.45	12 19 36.4	21 2 30.85	0.644	17 31 51.3	2.39
13	21 2 33.68	0.643	17 31 40.7	2.39	13 19 32.7	21 2 46.14	0.630	17 30 54.6	2.33
14	21 2 48.94	0.629	17 30 44.1	2.33	14 19 29.0	21 3 1.09	0.616	17 29 59.3	2.28
15	21 3 3.87	0.615	17 29 48.9	2.26	15 19 25.3	21 3 15.70	0.602	17 29 5.3	2.22
16	21 3 18.46	0.601	17 28 55.1	2.21	16 19 21.6	21 3 29.98	0.588	17 28 12.7	2.16
17	21 3 32.71	0.587	17 28 2.7	2.15	17 19 17.9	21 3 43.92	0.574	17 27 21.6	2.10
18	21 3 46.62	0.573	17 27 11.7	2.09	18 19 14.2	21 3 57.52	0.560	17 26 32.0	2.04
19	21 4 0.19	0.558	17 26 22.2	2.03	19 19 10.5	21 4 10.78	0.545	17 25 43.8	1.98
20	21 4 13.41	0.544	17 25 34.2	1.97	20 19 6.8	21 4 23.69	0.531	17 24 57.1	1.91
21	21 4 26.28	0.529	17 24 47.7	1.91	21 19 3.1	21 4 36.25	0.516	17 24 11.9	1.85
22	21 4 38.80	0.514	17 24 2.7	1.85	22 18 59.3	21 4 48.46	0.501	17 23 28.1	1.79
23	21 4 50.97	0.500	17 23 19.1	1.79	23 18 55.6	21 5 0.31	0.486	17 22 45.8	1.73
24	21 5 2.78	0.485	17 22 37.0	1.72	24 18 51.9	21 5 11.80	0.471	17 22 5.1	1.66
25	21 5 14.23	0.469	17 21 56.5	1.65	25 18 48.1	21 5 22.93	0.456	17 21 25.9	1.60
26	21 5 25.31	0.454	17 21 17.6	1.59	26 18 44.4	21 5 33.71	0.442	17 20 48.2	1.54
27	21 5 36.03	0.439	17 20 40.2	1.52	27 18 40.6	21 5 44.13	0.427	17 20 12.1	1.47
28	21 5 46.39	0.424	17 20 4.4	1.46	28 18 36.8	21 5 54.19	0.411	17 19 37.6	1.40
29	21 5 56.39	0.409	17 19 30.1	1.40	29 18 33.1	21 6 3.88	0.396	17 19 4.7	1.34
30	21 6 6.02	0.394	17 18 57.4	1.33	30 18 29.3	21 6 13.21	0.381	17 18 33.4	1.27
31	21 6 15.29	+0.379	-17 18 26.4	+ 1.26	31 18 25.5	21 6 22.17	+0.365	-17 18 3.7	+ 1.20

SATURN, 1874.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1874.	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	21 6 15.29	+0.379	−17 18 26.4	+ 1.26	1 18 25.5	21 6 22.17	+0.365	−17 18 3.7	+ 1.20
2	21 6 24.19	0.363	17 17 57.0	1.19	2 18 21.7	21 6 30.75	0.350	17 17 35.6	1.14
3	21 6 32.71	0.347	17 17 29.2	1.12	3 18 17.9	21 6 38.96	0.334	17 17 9.1	1.07
4	21 6 40.85	0.331	17 17 3.0	1.06	4 18 14.1	21 6 46.79	0.318	17 16 44.2	1.00
5	21 6 48.61	0.315	17 16 38.4	0.99	5 18 10.3	21 6 54.24	0.302	17 16 20.9	0.93
6	21 6 55.99	0.300	17 16 15.5	0.92	6 18 6.5	21 7 1.31	0.287	17 15 59.3	0.87
7	21 7 2.99	0.284	17 15 54.2	0.85	7 18 2.7	21 7 8.01	0.271	17 15 39.3	0.80
8	21 7 9.61	0.268	17 15 34.6	0.78	8 17 58.9	21 7 14.33	0.255	17 15 21.0	0.73
9	21 7 15.85	0.252	17 15 16.7	0.71	9 17 55.0	21 7 20.27	0.239	17 15 4.4	0.66
10	21 7 21.71	0.236	17 15 0.5	0.64	10 17 51.2	21 7 25.82	0.223	17 14 49.5	0.59
11	21 7 27.18	0.220	17 14 46.0	0.57	11 17 47.3	21 7 30.98	0.207	17 14 36.3	0.51
12	21 7 32.26	0.204	17 14 33.2	0.50	12 17 43.5	21 7 35.76	0.191	17 14 24.8	0.44
13	21 7 36.95	0.187	17 14 22.1	0.43	13 17 39.6	21 7 40.15	0.175	17 14 15.0	0.37
14	21 7 41.25	0.171	17 14 12.7	0.36	14 17 35.8	21 7 44.15	0.158	17 14 6.9	0.30
15	21 7 45.15	0.154	17 14 5.0	0.29	15 17 31.9	21 7 47.75	0.142	17 14 0.5	0.23
16	21 7 48.66	0.138	17 13 59.0	0.21	16 17 28.0	21 7 50.96	0.126	17 13 55.7	0.16
17	21 7 51.77	0.121	17 13 54.7	0.14	17 17 24.1	21 7 53.78	0.109	17 13 52.7	0.09
18	21 7 54.49	0.105	17 13 52.2	+ 0.07	18 17 20.2	21 7 56.21	0.093	17 13 51.4	+ 0.02
19	21 7 56.82	0.089	17 13 51.4	0.00	19 17 16.3	21 7 58.25	0.077	17 13 51.9	− 0.06
20	21 7 58.75	0.072	17 13 52.4	− 0.08	20 17 12.4	21 7 59.90	0.063	17 13 54.2	0.13
21	21 8 0.29	0.056	17 13 55.2	0.15	21 17 8.5	21 8 1.15	0.044	17 13 58.2	0.20
22	21 8 1.44	0.040	17 13 59.7	0.22	22 17 4.6	21 8 2.01	0.028	17 14 3.9	0.27
23	21 8 2.20	0.023	17 14 5.9	0.29	23 17 0.7	21 8 2.48	+0.012	17 14 11.3	0.34
24	21 8 2.56	+0.007	17 14 13.8	0.36	24 16 56.8	21 8 2.57	−0.004	17 14 20.3	0.41
25	21 8 2.53	−0.009	17 14 23.4	0.43	25 16 52.8	21 8 2.27	0.021	17 14 31.6	0.48
26	21 8 2.11	0.026	17 14 34.6	0.50	26 16 48.9	21 8 1.58	0.037	17 14 43.4	0.55
27	21 8 1.30	0.042	17 14 47.5	0.57	27 16 44.9	21 8 0.50	0.053	17 14 57.5	0.62
28	21 8 0.10	0.058	17 15 2.1	0.65	28 16 41.0	21 7 59.04	0.069	17 15 13.3	0.69
29	21 7 58.52	0.074	17 15 18.5	0.72	29 16 37.0	21 7 57.20	0.085	17 15 30.8	0.76
30	21 7 56.55	0.090	17 15 36.6	0.79	30 16 33.0	21 7 54.97	0.101	17 15 50.6	0.83
31	21 7 54.20	0.106	17 15 56.3	0.86	31 16 29.1	21 7 52.36	0.117	17 16 10.8	0.90
June 1	21 7 51.46	0.122	17 16 17.7	0.93	1 16 25.1	21 7 49.37	0.133	17 16 33.2	0.97
2	21 7 48.34	0.138	17 16 40.7	0.99	2 16 21.1	21 7 45.99	0.149	17 16 57.3	1.04
3	21 7 44.83	0.154	17 17 5.4	1.06	3 16 17.1	21 7 42.23	0.164	17 17 23.0	1.11
4	21 7 40.94	0.170	17 17 31.7	1.13	4 16 13.1	21 7 38.10	0.180	17 17 50.4	1.18
5	21 7 36.68	0.185	17 17 59.7	1.20	5 16 9.1	21 7 33.69	0.195	17 18 19.4	1.24
6	21 7 32.04	0.201	17 18 29.3	1.27	6 16 5.1	21 7 28.72	0.211	17 18 50.0	1.31
7	21 7 27.02	0.217	17 19 0.5	1.33	7 16 1.0	21 7 23.46	0.227	17 19 22.2	1.37
8	21 7 21.62	0.233	17 19 33.3	1.40	8 15 57.0	21 7 17.83	0.242	17 19 55.9	1.44
9	21 7 15.85	0.248	17 20 7.6	1.46	9 15 53.0	21 7 11.84	0.257	17 20 31.2	1.50
10	21 7 9.72	0.263	17 20 43.5	1.53	10 15 48.9	21 7 5.48	0.273	17 21 8.0	1.57
11	21 7 3.22	0.279	17 21 21.0	1.59	11 15 44.9	21 6 58.75	0.288	17 21 46.4	1.63
12	21 6 56.35	0.294	17 22 0.0	1.66	12 15 40.8	21 6 51.66	0.303	17 22 26.3	1.69
13	21 6 49.11	0.309	17 22 40.6	1.72	13 15 36.8	21 6 44.21	0.318	17 23 7.7	1.76
14	21 6 41.51	0.324	17 23 22.7	1.79	14 15 32.7	21 6 36.40	0.332	17 23 50.7	1.82
15	21 6 33.56	0.339	17 24 6.3	1.85	15 15 28.7	21 6 28.25	0.347	17 24 35.2	1.88
16	21 6 25.26	0.353	17 24 51.4	1.91	16 15 24.6	21 6 19.75	0.361	17 25 21.1	1.94
17	21 6 16.62	0.367	17 25 37.9	1.97	17 15 20.5	21 6 10.91	0.375	17 26 8.4	2.00
18	21 6 7.63	0.382	17 26 25.8	2.03	18 15 16.4	21 6 1.73	0.390	17 26 57.0	2.05
19	21 5 58.30	0.396	17 27 15.1	2.08	19 15 12.4	21 5 52.21	0.403	17 27 47.0	2.11
20	21 5 48.63	0.410	17 28 5.7	2.14	20 15 8.3	21 5 42.37	0.417	17 28 38.4	2.17
21	21 5 38.64	0.423	17 28 57.7	2.19	21 15 4.2	21 5 32.21	0.430	17 29 31.1	2.22
22	21 5 28.33	0.436	17 29 51.0	2.25	22 15 0.1	21 5 21.73	0.443	17 30 25.0	2.27
23	21 5 17.70	0.450	17 30 45.6	2.30	23 14 55.9	21 5 10.93	0.457	17 31 20.2	2.32
24	21 5 6.75	0.463	17 31 41.4	2.35	24 14 51.8	21 4 59.81	0.470	17 32 16.6	2.38
25	21 4 55.48	0.476	17 32 38.5	2.40	25 14 47.7	21 4 48.38	0.482	17 33 14.3	2.43
26	21 4 43.91	0.488	17 33 36.8	2.45	26 14 43.6	21 4 36.66	0.494	17 34 13.2	2.48
27	21 4 32.05	0.500	17 34 36.3	2.50	27 14 39.4	21 4 24.65	0.506	17 35 13.2	2.52
28	21 4 19.90	0.512	17 35 36.9	2.55	28 14 35.3	21 4 12.36	0.518	17 36 14.3	2.57
29	21 4 7.46	0.524	17 36 38.6	2.59	29 14 31.2	21 3 59.79	0.530	17 37 16.5	2.61
30	21 3 54.73	0.536	17 37 41.4	2.64	30 14 27.0	21 3 46.94	0.541	17 38 19.7	2.66
31	21 3 41.73	−0.547	−17 38 45.3	− 2.68	31 14 22.9	21 3 33.82	−0.552	−17 39 24.0	− 2.70

SATURN, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	21 3 41.73	−0.547	−17 38 45.3	− 2.68	1 14 22.9	21 3 33.82	−0.552	−17 39 24.0	− 2.70
2	21 3 28.46	0.559	17 39 50.2	2.73	2 14 18.7	21 3 20.43	0.564	17 40 29.3	2.74
3	21 3 14.92	0.570	17 40 56.1	2.77	3 14 14.6	21 3 6.77	0.575	17 41 35.6	2.78
4	21 3 1.12	0.580	17 42 3.0	2.81	4 14 10.4	21 2 52.85	0.585	17 42 42.8	2.82
5	21 2 47.06	0.591	17 43 10.8	2.84	5 14 6.2	21 2 38.68	0.595	17 43 50.9	2.86
6	21 2 32.75	0.601	17 44 19.5	2.88	6 14 2.1	21 2 24.27	0.605	17 44 59.9	2.89
7	21 2 18.20	0.611	17 45 29.0	2.91	7 13 57.9	21 2 9.62	0.615	17 46 9.8	2.93
8	21 2 3.41	0.621	17 46 39.4	2.95	8 13 53.7	21 1 54.74	0.624	17 47 20.5	2.96
9	21 1 48.39	0.630	17 47 50.7	2.99	9 13 49.5	21 1 39.65	0.633	17 48 32.0	3.00
10	21 1 33.16	0.639	17 49 2.8	3.02	10 13 45.3	21 1 24.34	0.642	17 49 44.3	3.03
11	21 1 17.72	0.648	17 50 15.6	3.05	11 13 41.1	21 1 8.82	0.651	17 50 57.3	3.05
12	21 1 2.07	0.656	17 51 29.0	3.07	12 13 36.9	21 0 53.09	0.659	17 52 10.9	3.08
13	21 0 46.21	0.665	17 52 43.1	3.10	13 13 32.7	21 0 37.17	0.667	17 53 25.2	3.11
14	21 0 30.16	0.673	17 53 57.9	3.13	14 13 28.5	21 0 21.07	0.675	17 54 40.1	3.13
15	21 0 13.93	0.680	17 55 13.3	3.15	15 13 24.3	21 0 4.79	0.682	17 55 55.6	3.16
16	20 59 57.53	0.687	17 56 29.2	3.17	16 13 20.1	20 59 48.35	0.688	17 57 11.6	3.18
17	20 59 40.97	0.693	17 57 45.6	3.19	17 13 15.9	20 59 31.75	0.695	17 58 28.0	3.19
18	20 59 24.25	0.700	17 59 2.4	3.21	18 13 11.7	20 59 15.00	0.701	17 59 44.8	3.21
19	20 59 7.38	0.706	18 0 19.6	3.23	19 13 7.5	20 58 58.10	0.707	18 1 2.0	3.22
20	20 58 50.37	0.711	18 1 37.2	3.24	20 13 3.3	20 58 41.07	0.712	18 2 19.5	3.24
21	20 58 33.24	0.716	18 2 55.1	3.25	21 12 59.1	20 58 23.92	0.717	18 3 37.3	3.25
22	20 58 15.99	0.721	18 4 13.3	3.26	22 12 54.9	20 58 6.65	0.722	18 4 55.5	3.26
23	20 57 58.62	0.726	18 5 31.8	3.27	23 12 50.6	20 57 49.28	0.726	18 6 13.9	3.27
24	20 57 41.15	0.730	18 6 50.5	3.27	24 12 46.4	20 57 31.81	0.730	18 7 32.5	3.28
25	20 57 23.58	0.734	18 8 9.4	3.28	25 12 42.2	20 57 14.25	0.733	18 8 51.2	3.28
26	20 57 5.93	0.737	18 9 28.4	3.29	26 12 38.0	20 56 56.61	0.737	18 10 10.0	3.29
27	20 56 48.20	0.740	18 10 47.5	3.30	27 12 33.8	20 56 38.89	0.740	18 11 28.9	3.29
28	20 56 30.40	0.743	18 12 6.7	3.30	28 12 29.5	20 56 21.11	0.742	18 12 47.9	3.29
29	20 56 12.54	0.745	18 13 25.9	3.30	29 12 25.3	20 56 3.28	0.744	18 14 7.0	3.29
30	20 55 54.63	0.747	18 14 45.2	3.30	30 12 21.1	20 55 45.40	0.746	18 15 26.0	3.29
31	20 55 36.68	0.749	18 16 4.4	3.30	31 12 16.8	20 55 27.48	0.747	18 16 44.9	3.29
Aug. 1	20 55 18.70	0.750	18 17 23.5	3.29	1 12 12.6	20 55 9.53	0.748	18 18 3.7	3.28
2	20 55 0.69	0.751	18 18 42.4	3.28	2 12 8.4	20 54 51.56	0.749	18 19 22.3	3.27
3	20 54 42.66	0.751	18 20 1.1	3.27	3 12 4.2	20 54 33.58	0.749	18 20 40.7	3.26
4	20 54 24.62	0.751	18 21 19.7	3.27	4 11 59.9	20 54 15.60	0.749	18 21 58.9	3.25
5	20 54 6.59	0.751	18 22 38.1	3.26	5 11 55.7	20 53 57.62	0.749	18 23 16.9	3.24
6	20 53 48.57	0.750	18 23 56.2	3.25	6 11 51.5	20 53 39.66	0.748	18 24 34.6	3.23
7	20 53 30.57	0.750	18 25 14.0	3.23	7 11 47.2	20 53 21.72	0.746	18 25 52.0	3.22
8	20 53 12.59	0.749	18 26 31.4	3.21	8 11 43.0	20 53 3.81	0.745	18 27 9.0	3.20
9	20 52 54.64	0.747	18 27 48.3	3.20	9 11 38.8	20 52 45.94	0.744	18 28 25.5	3.18
10	20 52 36.74	0.745	18 29 4.8	3.18	10 11 34.5	20 52 28.12	0.741	18 29 41.5	3.16
11	20 52 18.90	0.742	18 30 20.9	3.16	11 11 30.3	20 52 10.37	0.738	18 30 57.1	3.14
12	20 52 1.13	0.739	18 31 36.5	3.14	12 11 26.1	20 51 52.69	0.735	18 32 12.3	3.12
13	20 51 43.44	0.735	18 32 51.6	3.12	13 11 21.9	20 51 35.09	0.731	18 33 27.0	3.10
14	20 51 25.84	0.731	18 34 6.2	3.10	14 11 17.6	20 51 17.59	0.727	18 34 41.1	3.07
15	20 51 8.34	0.727	18 35 20.2	3.07	15 11 13.4	20 51 0.19	0.723	18 35 54.6	3.05
16	20 50 50.95	0.722	18 36 33.5	3.04	16 11 9.2	20 50 42.90	0.718	18 37 7.4	3.02
17	20 50 33.67	0.717	18 37 46.1	3.01	17 11 5.0	20 50 25.73	0.713	18 38 19.4	2.99
18	20 50 16.52	0.712	18 38 57.9	2.98	18 11 0.8	20 50 8.69	0.707	18 39 30.7	2.95
19	20 49 59.50	0.706	18 40 9.0	2.95	19 10 56.6	20 49 51.79	0.701	18 40 41.2	2.92
20	20 49 42.62	0.700	18 41 19.3	2.91	20 10 52.3	20 49 35.04	0.695	18 41 50.9	2.89
21	20 49 25.90	0.693	18 42 28.8	2.88	21 10 48.1	20 49 18.44	0.688	18 42 59.8	2.85
22	20 49 9.34	0.686	18 43 37.4	2.84	22 10 43.9	20 49 2.01	0.681	18 44 7.8	2.81
23	20 48 52.96	0.679	18 44 45.1	2.80	23 10 39.7	20 48 45.75	0.674	18 45 14.9	2.78
24	20 48 36.76	0.671	18 45 52.0	2.77	24 10 35.5	20 48 29.67	0.666	18 46 21.2	2.74
25	20 48 20.74	0.664	18 46 58.0	2.73	25 10 31.3	20 48 13.78	0.658	18 47 26.6	2.70
26	20 48 4.91	0.656	18 48 3.0	2.69	26 10 27.1	20 47 58.08	0.650	18 48 31.0	2.66
27	20 47 49.27	0.648	18 49 7.0	2.64	27 10 23.0	20 47 42.58	0.642	18 49 34.3	2.62
28	20 47 33.84	0.639	18 50 9.9	2.60	28 10 18.8	20 47 27.28	0.633	18 50 36.6	2.57
29	20 47 18.62	0.629	18 51 11.7	2.55	29 10 14.6	20 47 12.20	0.624	18 51 37.8	2.53
30	20 47 3.63	0.620	18 52 12.5	2.51	30 10 10.4	20 46 57.35	0.614	18 52 38.0	2.49
31	20 46 48.87	−0.610	−18 53 12.2	− 2.47	31 10 6.2	20 46 42.73	−0.604	−18 53 37.1	− 2.44

SATURN, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	20 46 34.35	-0.600	-18 54 10.9	- 2.43	1 10 2.1	20 46 28.35	-0.594	-18 54 35.1	- 2.39
2	20 46 20.07	0.590	18 55 8.5	2.38	2 9 57 9	20 46 14.22	0.583	18 55 32.0	2.35
3	20 46 6.05	0.579	18 56 4.9	2.33	3 9 53.7	20 46 0.35	0.572	18 56 27.8	2.30
4	20 45 52.29	0.568	18 57 0.1	2.28	4 9 49.6	20 45 46.74	0.561	18 57 22.4	2.25
5	20 45 38.80	0.556	18 57 54.1	2.23	5 9 45.4	20 45 33.40	0.550	18 58 15.8	2.20
6	20 45 25.58	0.545	18 58 46.9	2.17	6 9 41.3	20 45 20.33	0.539	18 59 7.9	2.14
7	20 45 12.64	0.533	18 59 38.4	2.12	7 9 37.1	20 45 7.54	0.527	18 59 58.7	2.09
8	20 44 59.98	0.521	19 0 28.6	2.06	8 9 33.0	20 44 55.03	0.515	19 0 48.2	2.03
9	20 44 47.62	0.509	19 1 17.5	2.01	9 9 28.8	20 44 42.82	0.502	19 1 36.4	1.98
10	20 44 35.57	0.496	19 2 5.1	1.96	10 9 24.7	20 44 30.92	0.489	19 2 23.3	1.93
11	20 44 23.83	0.483	19 2 51.4	1.90	11 9 20.6	20 44 19.34	0.476	19 3 9.0	1.88
12	20 44 12.41	0.469	19 3 36.4	1.85	12 9 16.5	20 44 8.08	0.463	19 3 53.4	1.82
13	20 44 1.30	0.456	19 4 20.0	1.79	13 9 12.4	20 43 57.13	0.449	19 4 36.4	1.76
14	20 43 50.52	0.442	19 5 2.2	1.73	14 9 8.3	20 43 46.51	0.436	19 5 18.0	1.70
15	20 43 40.08	0.428	19 5 43.0	1.67	15 9 4.2	20 43 36.22	0.422	19 5 58.2	1.64
16	20 43 29.98	0.414	19 6 22.4	1.61	16 9 0.1	20 43 26.27	0.407	19 6 36.9	1.58
17	20 43 20.22	0.399	19 7 0.4	1.55	17 8 56.0	20 43 16.67	0.393	19 7 14.2	1.52
18	20 43 10.81	0.385	19 7 36.9	1.49	18 8 51.9	20 43 7.42	0.378	19 7 50.0	1.46
19	20 43 1.75	0.370	19 8 12.0	1.43	19 8 47.8	20 42 58.52	0.363	19 8 24.4	1.40
20	20 42 53.05	0.355	19 8 45.6	1.37	20 8 43.7	20 42 49.98	0.348	19 8 57.4	1 34
21	20 42 44.71	0.340	19 9 17.7	1.31	21 8 39.6	20 42 41.80	0.333	19 9 28.9	1.28
22	20 42 36.74	0.324	19 9 48.3	1.24	22 8 35.6	20 42 33.98	0.318	19 9 58.9	1.22
23	20 42 29.14	0.309	19 10 17.4	1.18	23 8 31.5	20 42 26.53	0.303	19 10 27.4	1.16
24	20 42 21.91	0.294	19 10 45.0	1.12	24 8 27.5	20 42 19.45	0.287	19 10 54.4	1.09
25	20 42 15.05	0.278	19 11 11.1	1.06	25 8 23.4	20 42 12.74	0.272	19 11 19.9	1.03
26	20 42 8.57	0.262	19 11 35.7	0.99	26 8 19.4	20 42 6.41	0.256	19 11 43.9	0.97
27	20 42 2.47	0.246	19 11 58.8	0.93	27 8 15.4	20 42 0.46	0.240	19 12 6.4	0.90
28	20 41 56.76	0.230	19 12 0.3	0.86	28 8 11.3	20 41 54.90	0.224	19 12 27.3	0.84
29	20 41 51.44	0.214	19 12 40.3	0.80	29 8 7.3	20 41 49.72	0.208	19 12 46.7	0.77
30	20 41 46.50	0.198	19 12 58.7	0.74	30 8 3.3	20 41 44.93	0.191	19 13 4.5	0.71
Oct. 1	20 41 41.95	0.181	19 13 15.6	0.67	1 7 59.3	20 41 40.53	0.175	19 13 20.8	0.65
2	20 41 37.80	0.165	19 13 30.9	0.61	2 7 55.3	20 41 36.52	0.159	19 13 35.6	0.59
3	20 41 34.05	0.148	19 13 44.7	0.55	3 7 51.3	20 41 32.91	0.142	19 13 48.9	0.52
4	20 41 30.70	0.131	19 13 56.9	0.48	4 7 47.3	20 41 29.70	0.125	19 14 0.6	0.45
5	20 41 27.75	0.114	19 14 7.5	0.41	5 7 43.4	20 41 26.90	0.108	19 14 10.7	0.39
6	20 41 25.21	0.097	19 14 16.5	0.34	6 7 39.4	20 41 24.50	0.092	19 14 19.2	0.32
7	20 41 23.08	0.080	19 14 24.0	0.28	7 7 35.4	20 41 22.50	0.075	19 14 26.1	0.25
8	20 41 21.36	0.063	19 14 29.9	0.21	8 7 31.5	20 41 20.91	0.057	19 14 31.4	0.19
9	20 41 20.06	0.046	19 14 34.2	0.15	9 7 27.5	20 41 19.74	0.040	19 14 35.2	0.13
10	20 41 19.17	0.029	19 14 36.9	0.08	10 7 23.6	20 41 18.98	0.023	19 14 37.4	- 0.06
11	20 41 18.69	-0.011	19 14 38.0	- 0.01	11 7 19.6	20 41 18.63	-0.006	19 14 38.0	+ 0.01
12	20 41 18.63	+0.006	19 14 37.5	+ 0.05	12 7 15.7	20 41 18.69	+0.011	19 14 37.0	0.07
13	20 41 18.98	0.023	19 14 35.4	0.12	13 7 11.8	20 41 19.17	0.029	19 14 34.4	0.14
14	20 41 19.75	0.041	19 14 31.7	0.19	14 7 7.9	20 41 20.06	0.046	19 14 30.2	0.21
15	20 41 20.94	0.058	19 14 26.4	0.25	15 7 3.9	20 41 21.37	0.063	19 14 24.4	0.27
16	20 41 22.54	0.075	19 14 19.5	0.32	16 7 0.0	20 41 23.09	0.080	19 14 17.1	0.34
17	20 41 24.56	0.093	19 14 11.0	0.39	17 6 56.1	20 41 25.22	0.098	19 14 8.2	0.41
18	20 41 27.00	0.110	19 14 0.8	0.46	18 6 52.3	20 41 27.77	0.115	19 13 57.6	0.47
19	20 41 29.85	0.127	19 13 49.0	0.53	19 6 48.4	20 41 30.73	0.132	19 13 45.4	0.54
20	20 41 33.12	0.145	19 13 35.6	0.59	20 6 44.5	20 41 34.10	0.149	19 13 31.6	0.61
21	20 41 36.80	0.162	19 13 20.7	0.65	21 6 40.6	20 41 37.89	0.166	19 13 16.3	0.67
22	20 41 40.89	0.179	19 13 4.3	0.72	22 6 36.8	20 41 42.09	0.184	19 12 59.5	0.73
23	20 41 45.40	0.196	19 12 46.3	0.78	23 6 32.9	20 41 46.70	0.200	19 12 41.1	0.80
24	20 41 50.32	0.213	19 12 26.7	0.85	24 6 29.1	20 41 51.71	0.217	19 12 21.1	0.87
25	20 41 55.64	0.230	19 12 5.5	0.92	25 6 25.2	20 41 57.12	0.234	19 11 59.5	0.93
26	20 42 1.37	0.247	19 11 42.7	0.98	26 6 21.4	20 42 2.94	0.251	19 11 36.3	1.00
27	20 42 7.51	0.264	19 11 18.3	1.05	27 6 17.6	20 42 9.17	0.268	19 11 11.6	1.06
28	20 42 14.05	0.281	19 10 52.4	1.11	28 6 13.7	20 42 15.81	0.285	19 10 45.4	1.12
29	20 42 21.00	0.298	19 10 24.9	1.18	29 6 9.9	20 42 22.85	0.301	19 10 17.6	1.19
30	20 42 28.35	0.315	19 9 55.9	1.24	30 6 6.1	20 42 30.28	0.318	19 9 48.3	1.25
31	20 42 36.10	0.331	19 9 25.4	1.30	31 6 2.3	20 42 38.11	0.335	19 9 17.5	1.31
32	20 42 44.25	+0.348	-19 8 53.4	+ 1.36	32 5 58.5	20 42 46.34	+0.351	-19 8 45.2	+ 1.38

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	20 42 44.25	+0.348	-19 8 53.4	+ 1.36	1 5 58.5	20 42 46.34	+0.351	-19 8 45.2	+ 1.38
2	20 42 52.80	0.365	19 8 19.9	1.43	2 5 54.7	20 42 54.97	0.368	19 8 11.4	1.44
3	20 43 1.75	0.381	19 7 44.8	1.50	3 5 51.0	20 43 3.99	0.384	19 7 36.0	1.51
4	20 43 11.09	0.397	19 7 8.1	1.56	4 5 47.2	20 43 13.40	0.400	19 6 59.1	1.57
5	20 43 20.82	0.414	19 6 29.9	1.62	5 5 43.4	20 43 23.20	0.416	19 6 20.6	1.64
6	20 43 30.94	0.430	19 5 50.2	1.69	6 5 39.6	20 43 33.39	0.433	19 5 40.6	1.70
7	20 43 41.46	0.446	19 5 8.9	1.75	7 5 35.9	20 43 43.97	0.449	19 4 59.1	1.76
8	20 43 52.37	0.462	19 4 26.1	1.81	8 5 32.1	20 43 54.94	0.465	19 4 16.1	1.82
9	20 44 3.66	0.479	19 3 41.8	1.88	9 5 28.4	20 44 6.29	0.481	19 3 31.6	1.89
10	20 44 15.33	0.494	19 2 56.1	1.94	10 5 24.7	20 44 18.02	0.496	19 2 45.6	1.95
11	20 44 27.38	0.510	19 2 8.9	2.00	11 5 20.9	20 44 30.12	0.512	19 1 58.2	2.01
12	20 44 39.80	0.525	19 1 20.2	2.06	12 5 17.2	20 44 42.59	0.527	19 1 9.3	2.07
13	20 44 52.59	0.541	19 0 30.0	2.12	13 5 13.5	20 44 55.43	0.543	19 0 18.9	2.13
14	20 45 5.75	0.556	18 59 38.4	2.18	14 5 9.8	20 45 8.64	0.558	18 59 27.1	2.19
15	20 45 19.28	0.571	18 58 45.3	2.24	15 5 6.1	20 45 22.21	0.573	18 58 33.8	2.25
16	20 45 33.17	0.586	18 57 50.7	2.30	16 5 2.4	20 45 36.14	0.588	18 57 39.1	2.31
17	20 45 47.43	0.601	18 56 54.7	2.36	17 4 58.7	20 45 50.43	0.603	18 56 42.9	2.37
18	20 46 2.04	0.616	18 55 57.3	2.42	18 4 55.0	20 46 5.07	0.617	18 55 45.3	2.43
19	20 46 16.99	0.630	18 54 58.4	2.48	19 4 51.3	20 46 20.05	0.631	18 54 46.3	2.49
20	20 46 32.28	0.644	18 53 58.1	2.54	20 4 47.6	20 46 35.37	0.645	18 53 45.9	2.54
21	20 46 47.91	0.658	18 52 56.5	2.59	21 4 44.0	20 46 51.03	0.660	18 52 44.2	2.60
22	20 47 3.88	0.672	18 51 53.6	2.65	22 4 40.3	20 47 7.03	0.674	18 51 41.2	2.65
23	20 47 20.19	0.686	18 50 49.3	2.71	23 4 36.6	20 47 23.36	0.687	18 50 36.8	2.71
24	20 47 36.83	0.700	18 49 43.6	2.77	24 4 33.0	20 47 40.02	0.701	18 49 31.0	2.77
25	20 47 53.80	0.714	18 48 36.5	2.82	25 4 29.3	20 47 57.00	0.714	18 48 23.9	2.82
26	20 48 11.09	0.727	18 47 28.1	2.88	26 4 25.7	20 48 14.30	0.728	18 47 15.4	2.88
27	20 48 28.69	0.740	18 46 18.4	2.93	27 4 22.0	20 48 31.92	0.741	18 46 5.6	2.93
28	20 48 46 61	0.753	18 45 7.4	2.99	28 4 18.4	20 48 49.85	0.754	18 44 54.5	2.99
29	20 49 4.84	0.766	18 43 55.1	3.04	29 4 14.8	20 49 8.09	0.767	18 43 42.1	3.04
30	20 49 23.39	0.779	18 42 41.5	3.09	30 4 11.2	20 49 26.65	0.780	18 42 28.4	3.10
Dec. 1	20 49 42.25	0.792	18 41 26.6	3.15	1 4 7.5	20 49 45.52	0.792	18 41 13.5	3.15
2	20 50 1.41	0.804	18 40 10.3	3.21	2 4 3.9	20 50 4.68	0.804	18 39 57.2	3.21
3	20 50 20.86	0.816	18 38 52.7	3.26	3 4 0.3	20 50 24.13	0.816	18 38 39.6	3.26
4	20 50 40.60	0.829	18 37 33.9	3.31	4 3 56.7	20 50 43.87	0.829	18 37 20.8	3.31
5	20 51 0.63	0.841	18 36 13.9	3.36	5 3 53.1	20 51 3.90	0.841	18 36 0.8	3.36
6	20 51 20.95	0.853	18 34 52.7	3.41	6 3 49.5	20 51 24.22	0.852	18 34 39.7	3.40
7	20 51 41.56	0.865	18 33 30.4	3.46	7 3 45.9	20 51 44.82	0.864	18 33 17.4	3.46
8	20 52 2.45	0.876	18 32 6.8	3.51	8 3 42.3	20 52 5.70	0.876	18 31 53.8	3.51
9	20 52 23.61	0.887	18 30 42.0	3.56	9 3 38.8	20 52 26.85	0.887	18 30 29.0	3.56
10	20 52 45.03	0.898	18 29 15.9	3.61	10 3 35.2	20 52 48.26	0.897	18 29 2.9	3.61
11	20 53 6.71	0.909	18 27 48.6	3.66	11 3 31.6	20 53 9.92	0.908	18 27 35.6	3.66
12	20 53 28.64	0.919	18 26 20.1	3.71	12 3 28.0	20 53 31.83	0.918	18 26 7.2	3.71
13	20 53 50.83	0.930	18 24 50.5	3.76	13 3 24.5	20 53 54.00	0.929	18 24 37.7	3.75
14	20 54 13.27	0.940	18 23 19.8	3.80	14 3 20.9	20 54 16.42	0.939	18 23 7.1	3.80
15	20 54 35.95	0.950	18 21 48.0	3.85	15 3 17.4	20 54 39.08	0.949	18 21 35.4	3.84
16	20 54 58.87	0.960	18 20 15.1	3.89	16 3 13.8	20 55 1.98	0.959	18 20 2.6	3.89
17	20 55 22.02	0.969	18 18 41.2	3.94	17 3 10.3	20 55 25.10	0.968	18 18 28.7	3.93
18	20 55 45.39	0.979	18 17 6.2	3.98	18 3 6.7	20 55 48.44	0.977	18 16 53.8	3.98
19	20 56 8.99	0.988	18 15 30.1	4.03	19 3 3.2	20 56 12.00	0.986	18 15 17.8	4.02
20	20 56 32.81	0.997	18 13 53.0	4.07	20 2 59.7	20 56 35.79	0.996	18 13 40.8	4.06
21	20 56 56.85	1.006	18 12 14.8	4.11	21 2 56.1	20 56 59.80	1.005	18 12 2.7	4.11
22	20 57 21.10	1.015	18 10 35.5	4.16	22 2 52.6	20 57 24.02	1.013	18 10 23.5	4.15
23	20 57 45.55	1.023	18 8 55.2	4.20	23 2 49.1	20 57 48.44	1.021	18 8 43.3	4.19
24	20 58 10.20	1.031	18 7 14.0	4.24	24 2 45.5	20 58 13.05	1.029	18 7 2.2	4.23
25	20 58 35.04	1.039	18 5 31.9	4.27	25 2 42.0	20 58 37.85	1.037	18 5 20.2	4.27
26	20 59 0.07	1.047	18 3 48.9	4.31	26 2 38.5	20 59 2.84	1.045	18 3 37.4	4.30
27	20 59 25.28	1.054	18 2 5.0	4.35	27 2 35.0	20 59 28.01	1.053	18 1 53.7	4.34
28	20 59 50.67	1.062	18 0 20.1	4.39	28 2 31 5	20 59 53.36	1.060	18 0 9.0	4.38
29	21 0 16.25	1.070	17 58 34.3	4.43	29 2 28.0	21 0 18.90	1.068	17 58 23.4	4.42
30	21 0 42.01	1.077	17 56 47.6	4.46	30 2 24.5	21 0 44.61	1.075	17 56 36.9	4.46
31	21 1 7.94	1.084	17 55 0.0	4.50	31 2 21.0	21 1 10.49	1.082	17 54 49.5	4.50
32	21 1 34.03	+1.090	-17 53 11.5	+ 4.54	32 2 17.5	21 1 36.53	+1.088	-17 53 1.1	+ 4.53

URANUS, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	8 49 10.02	−0.365	+18 29 12.8	+ 1.52	0 14 6.1	8 49 4.86	−0.367	+18 29 34.4	+ 1.52
1	8 49 1.19	0.370	18 29 49.4	1.53	1 14 2.0	8 48 55.98	0.372	18 30 11.1	1.54
2	8 48 52.23	0.376	18 30 26.3	1.55	2 13 57.8	8 48 46.97	0.378	18 30 48.1	1.56
3	8 48 43.15	0.381	18 31 3.7	1.56	3 13 53.7	8 48 37.84	0.383	18 31 25.6	1.58
4	8 48 33.94	0.386	18 31 41.4	1.58	4 13 49.7	8 48 28.59	0.388	18 32 3.4	1.59
5	8 48 24.61	0.391	18 32 19.6	1.60	5 13 45.6	8 48 19.23	0.392	18 32 41.7	1.60
6	8 48 15.18	0.395	18 32 58.1	1.61	6 13 41.5	8 48 9.76	0.396	18 33 20.3	1.61
7	8 48 5.65	0.399	18 33 37.0	1.63	7 13 37.4	8 48 0.20	0.400	18 33 59.2	1.63
8	8 47 56.01	0.403	18 34 16.1	1.64	8 13 33.3	8 47 50.53	0.404	18 34 38.3	1.64
9	8 47 46.27	0.407	18 34 55.6	1.65	9 13 29.2	8 47 40.76	0.408	18 35 17.9	1.65
10	8 47 36.45	0.410	18 35 35.3	1.66	10 13 25.1	8 47 30.92	0.411	18 35 57.6	1.66
11	8 47 26.54	0.414	18 36 15.4	1.68	11 13 21.0	8 47 20.99	0.415	18 36 37.7	1.67
12	8 47 16.54	0.417	18 36 55.6	1.69	12 13 16.9	8 47 10.77	0.418	18 37 17.9	1.69
13	8 47 6.46	0.421	18 37 36.2	1.70	13 13 12.8	8 47 0.87	0.421	18 37 58.5	1.70
14	8 46 56.30	0.424	18 38 17.0	1.70	14 13 8.7	8 46 50.71	0.424	18 38 39.3	1.71
15	8 46 46.07	0.427	18 38 58.0	1.71	15 13 4.6	8 46 40.48	0.427	18 39 20.3	1.72
16	8 46 35.78	0.430	18 39 39.1	1.72	16 13 0.5	8 46 30.18	0.430	18 40 1.4	1.72
17	8 46 25.42	0.432	18 40 20.4	1.73	17 12 56.4	8 46 19.82	0.432	18 40 42.7	1.72
18	8 46 15.01	0.434	18 41 1.8	1.73	18 12 52.3	8 46 9.41	0.434	18 41 24.1	1.73
19	8 46 4.54	0.436	18 41 43.3	1.73	19 12 48.2	8 45 58.95	0.436	18 42 5.5	1.73
20	8 45 54.03	0.438	18 42 24.9	1.74	20 12 44.1	8 45 48.45	0.438	18 42 47.0	1.73
21	8 45 43.48	0.440	18 43 6.6	1.74	21 12 40.0	8 45 37.91	0.439	18 43 28.6	1.74
22	8 45 32.90	0.441	18 43 48.3	1.74	22 12 35.9	8 45 27.34	0.440	18 44 10.2	1.74
23	8 45 22.29	0.442	18 44 30.1	1.74	23 12 31.8	8 45 16.75	0.441	18 44 51.9	1.74
24	8 45 11.65	0.443	18 45 11.9	1.74	24 12 27.7	8 45 6.13	0.442	18 45 33.6	1.74
25	8 45 0.99	0.444	18 45 53.7	1.74	25 12 23.5	8 44 55.49	0.443	16 46 15.3	1.74
26	8 44 50.31	0.445	18 46 35.5	1.74	26 12 19.4	8 44 44.83	0.444	18 46 57.0	1.73
27	8 44 39.62	0.445	18 47 17.2	1.74	27 12 15.3	8 44 34.17	0.444	18 47 38.5	1.73
28	8 44 28.93	0.445	18 47 58.9	1.74	28 12 11.2	8 44 23.51	0.444	18 48 20.0	1.73
29	8 44 18.23	0.445	16 48 40.5	1.73	29 12 7.1	8 44 12.84	0.444	18 49 1.5	1.73
30	8 44 7.54	0.445	18 49 22.0	1.73	30 12 3.0	8 44 2.18	0.443	18 49 42.8	1.72
31	8 43 56.86	0.445	18 50 3.3	1.72	31 11 58.9	8 43 51.54	0.443	18 50 23.9	1.72
Feb. 1	8 43 46.20	0.444	18 50 44.5	1.71	1 11 54.8	8 43 40.92	0.442	18 51 4.9	1.71
2	8 43 35.55	0.443	18 51 25.6	1.70	2 11 50.7	8 43 30.31	0.441	18 51 45.8	1.71
3	8 43 24.92	0.442	18 52 6.5	1.70	3 11 46.6	8 43 19.72	0.440	18 52 26.5	1.70
4	8 43 14.31	0.441	18 52 47.2	1.69	4 11 42.5	8 43 9.16	0.439	18 53 7.0	1.69
5	8 43 3.74	0.439	18 53 27.7	1.68	5 11 38.4	8 42 58.63	0.437	18 53 47.3	1.68
6	8 42 53.20	0.438	18 54 8.0	1.67	6 11 34.2	8 42 48.14	0.436	18 54 27.4	1.67
7	8 42 42.71	0.436	18 54 48.1	1.66	7 11 30.1	8 42 37.69	0.434	18 55 7.3	1.66
8	8 42 32.25	0.434	18 55 27.9	1.65	8 11 26.0	8 42 27.29	0.432	18 55 46.9	1.65
9	8 42 21.85	0.432	18 56 7.4	1.64	9 11 21.9	8 42 16.95	0.429	18 56 26.1	1.63
10	8 42 11.50	0.430	18 56 46.6	1.63	10 11 17.8	8 42 6.66	0.427	18 57 5.1	1.62
11	8 42 1.22	0.427	18 57 25.7	1.61	11 11 13.7	8 41 56.44	0.424	18 57 43.9	1.60
12	8 41 51.00	0.424	18 58 4.2	1.60	12 11 9.6	8 41 46.27	0.422	18 56 22.1	1.59
13	8 41 40.83	0.421	18 58 42.4	1.59	13 11 5.5	8 41 36.17	0.419	18 59 0.0	1.57
14	8 41 30.74	0.418	18 59 20.2	1.57	14 11 1.4	8 41 26.14	0.416	18 59 37.6	1.56
15	8 41 20.74	0.414	18 59 57.7	1.55	15 10 57.3	8 41 16.20	0.412	19 0 14.8	1.54
16	8 41 10.81	0.411	19 0 34.8	1.54	16 10 53.2	8 41 6.34	0.408	19 0 51.6	1.52
17	8 41 0.98	0.407	19 1 11.6	1.52	17 10 49.2	8 40 56.58	0.404	19 1 28.1	1.50
18	8 40 51.24	0.403	19 1 47.9	1.50	18 10 45.1	8 40 46.91	0.400	19 2 4.2	1.48
19	8 40 41.60	0.399	19 2 23.8	1.48	19 10 41.0	8 40 37.34	0.396	19 2 39.8	1.47
20	8 40 32.06	0.395	19 2 59.1	1.46	20 10 36.9	8 40 27.87	0.392	19 3 14.8	1.45
21	8 40 22.62	0.391	19 3 34.1	1.44	21 10 32.8	8 40 18 51	0.387	19 3 49.4	1.43
22	8 40 13.29	0.386	19 4 8.5	1.42	22 10 28.7	8 40 9.25	0.383	19 4 23.5	1.41
23	8 40 4.08	0.381	19 4 42.4	1.40	23 10 24.6	8 40 0.11	0.378	19 4 57.1	1.39
24	8 39 54.99	0.376	19 5 15.7	1.38	24 10 20.5	8 39 51.10	0.373	19 5 30.1	1.37
25	8 39 46.02	0.371	19 5 48.5	1.36	25 10 16.5	8 39 42.21	0.368	19 6 2.5	1.34
26	8 39 37.17	0.366	19 6 20.8	1.34	26 10 12.4	8 39 33.45	0.363	19 6 34.5	1.32
27	8 39 28.47	0.360	19 6 52.6	1.31	27 10 8.3	8 39 24.82	0.357	19 7 6.0	1.30
28	8 39 19.89	0.355	19 7 23.8	1.29	28 10 4.2	8 39 16.32	0.351	19 7 36.9	1.28
29	8 39 11.44	−0.349	+19 7 54.5	+ 1.27	29 10 0.2	8 39 7.96	−0.345	+19 8 7.2	+ 1.25

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	8 39 11.44	-0.349	+19 7 54.5	+ 1.27	1 10 0.2	8 39 7.96	-0.345	+19 8 7.2	+ 1.25
2	8 39 3.13	0.343	19 8 24.5	1.24	2 9 56.1	8 38 59.73	0.339	19 8 36.9	1.23
3	8 38 54.98	0.337	19 8 54.0	1.21	3 9 52.0	8 38 51.66	0.333	19 9 6.1	1.20
4	8 38 46.97	0.331	19 9 22.8	1.19	4 9 48.0	8 38 43.73	0.327	19 9 34.6	1.18
5	8 38 39.11	0.324	19 9 51.1	1.16	5 9 43.9	8 38 35.95	0.321	19 10 2.5	1.15
6	8 38 31.39	0.318	19 10 18.7	1.14	6 9 39.8	8 38 28.32	0.314	19 10 29.8	1.12
7	8 38 23.83	0.311	19 10 45.6	1.11	7 9 35.7	8 38 20.84	0.307	19 10 56.4	1.09
8	8 38 16.44	0.304	19 11 12.0	1.08	8 9 31.7	8 38 13.54	0.301	19 11 22.4	1.07
9	8 38 9.21	0.297	19 11 37.7	1.05	9 9 27.7	8 38 6.40	0.294	19 11 47.7	1.04
10	8 38 2.14	0.290	19 12 2.7	1.03	10 9 23.6	8 37 59.41	0.287	19 12 12.3	1.01
11	8 37 55.24	0.283	19 12 27.0	1.00	11 9 19.5	8 37 52.60	0.280	19 12 36.3	0.98
12	8 37 48.51	0.276	19 12 50.7	0.97	12 9 15.5	8 37 45.96	0.273	19 12 59.7	0.95
13	8 37 41.97	0.269	19 13 13.6	0.94	13 9 11.5	8 37 39.49	0.266	19 13 22.3	0.92
14	8 37 35.59	0.262	19 13 35.9	0.91	14 9 7.4	8 37 33.21	0.259	19 13 44.2	0.90
15	8 37 29.40	0.254	19 13 57.5	0.88	15 9 3.4	8 37 27.11	0.251	19 14 5.5	0.87
16	8 37 23.38	0.247	19 14 18.2	0.86	16 8 59.4	8 37 21.18	0.243	19 14 25.9	0.84
17	8 37 17.56	0.238	19 14 38.3	0.83	17 8 55.4	8 37 15.45	0.235	19 14 45.7	0.81
18	8 37 11.92	0.230	19 14 57.7	0.80	18 8 51.3	8 37 9.90	0.227	19 15 4.7	0.78
19	8 37 6.49	0.222	19 15 16.3	0.77	19 8 47.3	8 37 4.55	0.219	19 15 23.0	0.75
20	8 37 1.24	0.214	19 15 34.2	0.74	20 8 43.3	8 26 59.39	0.211	19 15 40.6	0.72
21	8 36 56.20	0.206	19 15 51.4	0.71	21 8 39.3	8 36 54.43	0.203	19 15 57.5	0.69
22	8 36 51.35	0.198	19 16 7.8	0.68	22 8 35.3	8 36 49.67	0.195	19 16 13.5	0.66
23	8 36 46.70	0.189	19 16 23.4	0.64	23 8 31.4	8 36 45.10	0.187	19 16 28.8	0.62
24	8 36 42.25	0.181	19 16 38.2	0.60	24 8 27.3	8 36 40.73	0.179	19 16 43.3	0.58
25	8 36 38.00	0.173	19 16 52.3	0.56	25 8 23.3	8 36 36.56	0.170	19 16 57.1	0.55
26	8 36 33.96	0.165	19 17 5.5	0.53	26 8 19.3	8 36 32.60	0.161	19 17 10.0	0.52
27	8 36 30.12	0.156	19 17 17.9	0.50	27 8 15.3	8 36 28.84	0.152	19 17 22.1	0.48
28	8 36 26.49	0.147	19 17 29.6	0.47	28 8 11.3	8 36 25.29	0.143	19 17 33.5	0.45
29	8 36 23.07	0.138	19 17 40.5	0.43	29 8 7.3	8 36 21.95	0.135	19 17 44.1	0.42
30	8 36 19.86	0.129	19 17 50.6	0.40	30 8 3.3	8 36 18.82	0.126	19 17 53.9	0.39
31	8 36 16.87	0.120	19 17 59.9	0.37	31 7 59.3	8 36 15.91	0.117	19 18 2.9	0.36
Apr. 1	8 36 14.09	0.111	19 18 8.4	0.34	1 7 55.3	8 36 13.21	0.108	19 18 11.1	0.33
2	8 36 11.52	0.102	19 18 16.1	0.30	2 7 51.4	8 36 10.72	0.099	19 18 18.5	0.29
3	8 36 9.17	0.093	19 18 22.9	0.27	3 7 47.4	8 36 8.44	0.090	19 18 25.0	0.26
4	8 36 7.03	0.084	19 18 29.0	0.24	4 7 43.4	8 36 6.38	0.082	19 18 30.8	0.22
5	8 36 5.10	0.075	19 18 34.2	0.21	5 7 39.4	8 36 4.53	0.073	19 18 35.7	0.19
6	8 36 3.38	0.066	19 18 38.8	0.17	6 7 35.5	8 36 2.88	0.064	19 18 40.0	0.16
7	8 36 1.88	0.057	19 18 42.5	0.14	7 7 31.5	8 36 1.46	0.054	19 18 43.5	0.12
8	8 36 0.60	0.048	19 18 45.4	0.11	8 7 27.6	8 36 0.25	0.045	19 18 46.1	0.09
9	8 35 59.55	0.039	19 18 47.5	0.07	9 7 23.6	8 35 59.27	0.036	19 18 47.9	0.05
10	8 35 58.72	0.030	19 18 48.8	+ 0.04	10 7 19.7	8 35 58.51	0.027	19 18 49.0	+ 0.02
11	8 35 58.11	0.021	19 18 49.2	0.00	11 7 15.7	8 35 57.97	0.018	19 18 49.1	- 0.02
12	8 35 57.71	0.012	19 18 48.7	- 0.03	12 7 11.8	8 35 57.64	-0.009	19 18 48.3	0.05
13	8 35 57.53	-0.003	19 18 47.5	0.06	13 7 7.9	8 35 57.53	0.000	19 18 46.9	0.08
14	8 35 57.58	+0 007	19 18 45.5	0.10	14 7 4.0	8 35 57.64	+0.009	19 18 44.7	0.11
15	8 35 57.86	0.016	19 18 42.7	0.14	15 7 0.1	8 35 57.98	0.018	19 18 41.6	0.14
16	8 35 58.36	0.026	19 18 39.0	0.17	16 6 56.2	8 35 58.54	0.028	19 18 37.7	0.18
17	8 35 59.09	0.035	19 18 34.4	0.21	17 6 52.2	8 35 59.33	0.037	19 18 32.9	0.21
18	8 36 0.04	0.044	19 18 29.1	0.24	18 6 48.3	8 36 0.35	0.046	19 18 27.4	0.25
19	8 36 1.21	0.053	19 18 23.0	0.27	19 6 44.4	8 36 1.58	0.056	19 18 21.1	0.28
20	8 36 2.59	0.062	19 18 16.1	0.30	20 6 40.5	8 36 3.02	0.065	19 18 14.0	0.31
21	8 36 4.19	0.071	19 18 8.4	0.34	21 6 36.6	8 36 4.68	0.074	19 18 6.1	0.34
22	8 36 6.03	0.081	19 17 59.8	0.37	22 6 32.7	8 36 6.57	0.083	19 17 57.3	0.38
23	8 36 8.08	0.090	19 17 50.4	0.41	23 6 28.8	8 36 8.68	0.091	19 17 47.7	0.41
24	8 36 10.36	0.099	19 17 40.2	0.44	24 6 24.9	8 36 11.01	0.101	19 17 37.3	0.45
25	8 36 12.85	0.108	19 17 29.2	0.47	25 6 21.0	8 36 13.55	0.110	19 17 26.1	0.48
26	8 36 15.55	0.117	19 17 17.4	0.50	26 6 17.2	8 36 16.30	0.119	19 17 14.1	0.52
27	8 36 18.48	0.126	19 17 4.7	0.54	27 6 13.3	8 36 19.28	0.128	19 17 1.2	0.55
28	8 36 21.63	0.135	19 16 51.3	0.57	28 6 9.4	8 36 22.48	0.137	19 16 47.6	0.58
29	8 36 24.99	0.144	19 16 37.1	0.60	29 6 5.5	8 36 25.88	0.146	19 16 33.2	0.61
30	8 36 28.56	0.153	19 16 22.1	0.63	30 6 1.7	8 36 29.49	0.155	19 16 18.1	0.65
31	8 36 32.34	+0.162	+19 16 6.3	- 0.66	31 5 57.8	8 36 33.32	+0.164	+19 16 2.1	- 0.68

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	8 36 32.34	+0.162	+19 16 6.3	− 0.67	1 5 57.8	8 36 33.32	+0.164	+19 16 2.1	− 0.68
2	8 36 36.34	0.171	19 15 49.8	0.70	2 5 53.9	8 36 37.36	0.173	19 15 45.5	0.71
3	8 36 40.55	0.180	19 15 32.5	0.74	3 5 50.0	8 36 41.61	0.182	19 15 28.1	0.74
4	8 36 44.98	0.188	19 15 14.5	0.78	4 5 46.2	8 36 46.08	0.190	19 15 10.0	0.77
5	8 36 49.60	0.197	19 14 55.7	0.81	5 5 42.3	8 36 50.74	0.199	19 14 51.1	0.80
6	8 36 54.44	0.206	19 14 36.1	0.84	6 5 38.5	8 36 55.62	0.207	19 14 31.4	0.83
7	8 36 59.49	0.215	19 14 15.6	0.87	7 5 34.6	8 37 0.70	0.216	19 14 10.8	0.86
8	8 37 4.75	0.223	19 13 54.5	0.90	8 5 30.8	8 37 5.99	0.224	19 13 49.5	0.90
9	8 37 10.22	0.232	19 13 32.5	0.93	9 5 26.9	8 37 11.49	0.233	19 13 27.4	0.93
10	8 37 15.88	0.240	19 13 9.8	0.96	10 5 23.1	8 37 17.18	0.241	19 13 4.6	0.96
11	8 37 21.74	0.249	19 12 46.4	0.99	11 5 19.3	8 37 23.07	0.250	19 12 41.1	0.99
12	8 37 27.81	0.257	19 12 22.2	1.02	12 5 15.5	8 37 29.17	0.258	19 12 16.8	1.03
13	8 37 34.08	0.266	19 11 57.3	1.05	13 5 11.6	8 37 35.47	0.267	19 11 51.8	1.06
14	8 37 40.56	0.274	19 11 31.6	1.08	14 5 7.8	8 37 41.98	0.275	19 11 26.0	1.09
15	8 37 47.22	0.282	19 11 5.3	1.11	15 5 4.0	8 37 48.66	0.283	19 10 59.6	1.12
16	8 37 54.08	0.290	19 10 38.3	1.14	16 5 0.2	8 37 55.54	0.291	19 10 32.6	1.15
17	8 38 1.13	0.298	19 10 10.4	1.17	17 4 56.3	8 38 2.61	0.299	19 10 4.6	1.18
18	8 38 8.39	0.306	19 9 41.9	1.20	18 4 52.5	8 38 9.89	0.306	19 9 36.0	1.21
19	8 38 15.82	0.314	19 9 12.6	1.23	19 4 48.7	8 38 17.34	0.314	19 9 6.6	1.24
20	8 38 23.46	0.322	19 8 42.7	1.26	20 4 44.9	8 38 25.00	0.322	19 8 36.7	1.27
21	8 38 31.28	0.330	19 8 12.1	1.29	21 4 41.1	8 38 32.84	0.330	19 8 6.0	1.30
22	8 38 39.29	0.337	19 7 40.8	1.32	22 4 37.3	8 38 40.86	0.338	19 7 34.6	1.33
23	8 38 47.48	0.345	19 7 8.8	1.35	23 4 33.5	8 38 49.06	0.345	19 7 2.6	1.36
24	8 38 55.85	0.352	19 6 36.1	1.38	24 4 29.7	8 38 57.44	0.352	19 6 29.9	1.38
25	8 39 4.39	0.360	19 6 2.6	1.41	25 4 25.9	8 39 5.99	0.359	19 5 56.3	1.41
26	8 39 13.11	0.367	19 5 28.4	1.43	26 4 22.1	8 39 14.72	0.367	19 5 22.1	1.44
27	8 39 22.01	0.374	19 4 53.6	1.46	27 4 18.3	8 39 23.63	0.374	19 4 47.3	1.47
28	8 39 31.07	0.381	19 4 18.2	1.49	28 4 14.6	8 39 32.70	0.381	19 4 11.9	1.49
29	8 39 40.30	0.388	19 3 42.1	1.52	29 4 10.8	8 39 41.94	0.388	19 3 35.7	1.52
30	8 39 49.70	0.395	19 3 5.4	1.55	30 4 6.9	8 39 51.34	0.395	19 2 59.0	1.55
31	8 39 59.27	0.402	19 2 28.0	1.57	31 4 3.2	8 40 0.91	0.402	19 2 21.6	1.58
June 1	8 40 9.00	0.408	19 1 50.1	1.60	1 3 59.5	8 40 10.64	0.408	19 1 43.7	1.60
2	8 40 18.89	0.415	19 1 11.5	1.62	2 3 55.7	8 40 20.53	0.415	19 1 5.1	1.63
3	8 40 28.94	0.421	19 0 32.3	1.65	3 3 51.9	8 40 30.58	0.421	19 0 25.9	1.65
4	8 40 39.14	0.428	18 59 52.5	1.67	4 3 48.1	8 40 40.78	0.428	18 59 46.1	1.68
5	8 40 49.52	0.434	18 59 12.1	1.70	5 3 44.4	8 40 51.15	0.435	18 59 5.7	1.70
6	8 41 0.04	0.441	18 58 31.0	1.72	6 3 40.6	8 41 1.67	0.441	18 58 24.6	1.73
7	8 41 10.71	0.447	18 57 49.4	1.74	7 3 36.9	8 41 12.34	0.447	18 57 43.0	1.75
8	8 41 21.53	0.454	18 57 7.1	1.77	8 3 33.1	8 41 23.15	0.453	18 57 0.7	1.78
9	8 41 32.50	0.460	18 56 24.4	1.79	9 3 29.4	8 41 34.11	0.459	18 56 18.1	1.80
10	8 41 43.62	0.467	18 55 41.0	1.82	10 3 25.6	8 41 45.22	0.465	18 55 34.8	1.82
11	8 41 54.87	0.473	18 54 57.1	1.84	11 3 21.9	8 41 56.46	0.471	18 54 51.0	1.84
12	8 42 6.26	0.479	18 54 12.6	1.86	12 3 18.2	8 42 7.84	0.477	18 54 6.5	1.86
13	8 42 17.80	0.484	18 53 27.6	1.88	13 3 14.5	8 42 19.37	0.483	18 53 21.5	1.88
14	8 42 29.48	0.489	18 52 42.0	1.90	14 3 10.7	8 42 31.04	0.489	18 52 36.0	1.90
15	8 42 41.29	0.494	18 51 56.1	1.92	15 3 7.0	8 42 42.84	0.494	18 51 50.2	1.92
16	8 42 53.21	0.499	18 51 9.6	1.94	16 3 3.3	8 42 54.74	0.500	18 51 3.7	1.94
17	8 43 5.26	0.505	18 50 22.6	1.96	17 2 59.6	8 43 6.78	0.505	18 50 16.7	1.97
18	8 43 17.45	0.510	18 49 34.9	1.99	18 2 55.8	8 43 18.96	0.510	18 49 29.1	1.99
19	8 43 29.76	0.515	18 48 46.8	2.01	19 2 52.1	8 43 31.25	0.515	18 48 41.1	2.01
20	8 43 42.19	0.520	18 47 58.2	2.03	20 2 48.4	8 43 43.66	0.520	18 47 52.6	2.03
21	8 43 54.73	0.525	18 47 9.2	2.05	21 2 44.7	8 43 56.18	0.524	18 47 3.6	2.05
22	8 44 7.37	0.530	18 46 19.6	2.07	22 2 40.9	8 44 8.80	0.529	18 46 14.1	2.07
23	8 44 20.15	0.534	18 45 29.6	2.09	23 2 37.2	8 44 21.56	0.534	18 45 24.2	2.08
24	8 44 33.03	0.539	18 44 39.2	2.11	24 2 33.5	8 44 34.42	0.538	18 44 33.9	2.10
25	8 44 46.02	0.543	18 43 48.4	2.13	25 2 29.8	8 44 47.38	0.542	18 43 43.1	2.12
26	8 44 59.10	0.548	18 42 57.0	2.15	26 2 26.0	8 45 0.44	0.546	18 42 51.8	2.14
27	8 45 12.28	0.552	18 42 5.3	2.17	27 2 22.3	8 45 13.59	0.550	18 42 0.2	2.16
28	8 45 25.57	0.556	18 41 13.1	2.18	28 2 18.6	8 45 26.85	0.554	18 41 8.1	2.18
29	8 45 38.94	0.560	18 40 20.5	2.20	29 2 14.9	8 45 40.19	0.558	18 40 15.5	2.19
30	8 45 52.42	0.564	18 39 27.5	2.21	30 2 11.2	8 45 53.65	0.562	18 39 22.6	2.21
31	8 46 5.98	+0.567	+18 38 34.2	− 2.23	31 2 7.5	8 46 7.18	+0.565	+18 38 29.4	− 2.22

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	8 46 5.98	+0.567	+18 38 34.2	− 2.23	1 2 7.5	8 46 7.18	+0.565	+18 38 29.4	− 2.22
2	8 46 19.63	0.571	18 37 40.4	2.24	2 2 3.8	8 46 20.80	0.569	18 37 35.7	2.24
3	8 46 33.37	0.574	18 36 46.3	2.26	3 2 0.1	8 46 34.51	0.573	18 36 41.7	2.26
4	8 46 47.20	0.578	18 35 51.7	2.28	4 1 56.4	8 46 48.31	0.576	18 35 47.2	2.28
5	8 47 1.11	0.581	18 34 56.8	2.30	5 1 52.7	8 47 2.19	0.579	18 34 52.4	2.29
6	8 47 15.09	0.584	18 34 1.5	2.31	6 1 49.0	8 47 16.14	0.582	18 33 57.3	2.31
7	8 47 29.14	0.587	18 33 6.0	2.32	7 1 45.3	8 47 30.16	0.585	18 33 1.9	2.32
8	8 47 43.26	0.590	18 32 10.1	2.33	8 1 41.6	8 47 44.25	0.588	18 32 6.1	2.33
9	8 47 57.46	0.593	18 31 13.9	2.35	9 1 37.9	8 47 58.42	0.591	18 31 10.0	2.34
10	8 48 11.73	0.596	18 30 17.4	2.36	10 1 34.2	8 48 12.66	0.594	18 30 13.6	2.36
11	8 48 26.06	0.598	18 29 20.5	2.37	11 1 30.5	8 48 26.96	0.597	18 29 16.9	2.37
12	8 48 40.45	0.601	18 28 23.4	2.38	12 1 26.8	8 48 41.32	0.600	18 28 19.9	2.38
13	8 48 54.90	0.603	18 27 26.1	2.39	13 1 23.1	8 48 55.74	0.602	18 27 22.7	2.39
14	8 49 9.41	0.606	18 26 28.4	2.40	14 1 19.4	8 49 10.22	0.604	18 26 25.1	2.40
15	8 49 23.98	0.608	18 25 30.5	2.41	15 1 15.7	8 49 24.75	0.607	18 25 27.4	2.41
16	8 49 38.60	0.610	18 24 32.3	2.42	16 1 12.0	8 49 39.34	0.609	18 24 29.3	2.42
17	8 49 53.26	0.612	18 23 33.9	2.43	17 1 8.3	8 49 53.97	0.611	18 23 31.0	2.43
18	8 50 7.97	0.614	18 22 35.4	2.43	18 1 4.6	8 50 8.64	0.613	18 22 32.7	2.44
19	8 50 22.73	0.615	18 21 36.6	2.44	19 1 1.0	8 50 23.36	0.614	18 21 34.1	2.45
20	8 50 37.52	0.617	18 20 37.5	2.45	20 0 57.3	8 50 38.12	0.615	18 20 35.1	2.46
21	8 50 52.34	0.618	18 19 38.4	2.46	21 0 53.6	8 50 52.90	0.616	18 19 36.1	2.46
22	8 51 7.19	0.620	18 18 39.0	2.47	22 0 49.9	8 51 7.71	0.617	18 18 36.9	2.47
23	8 51 22.08	0.621	18 17 39.4	2.48	23 0 46.2	8 51 22.56	0.619	18 17 37.5	2.47
24	8 51 37.00	0.622	18 16 39.6	2.49	24 0 42.5	8 51 37.45	0.620	18 16 37.8	2.48
25	8 51 51.94	0.623	18 15 39.6	2.50	25 0 38.8	8 51 52.35	0.621	18 15 37.9	2.49
26	8 52 6.90	0.624	18 14 39.5	2.50	26 0 35.1	8 52 7.27	0.622	18 14 38.0	2.50
27	8 52 21.88	0.625	18 13 39.3	2.51	27 0 31.5	8 52 22.21	0.623	18 13 38.0	2.50
28	8 52 36.88	0.626	18 12 39.1	2.51	28 0 27.8	8 52 37.18	0.623	18 12 37.9	2.51
29	8 52 51.89	0.626	18 11 38.7	2.52	29 0 24.1	8 52 52.15	0.624	18 11 37.6	2.51
30	8 53 6.91	0.626	18 10 38.2	2.52	30 0 20.4	8 53 7.13	0.625	18 10 37.3	2.52
31	8 53 21.94	0.626	18 9 37.6	2.53	31 0 16.7	8 53 22.12	0.625	18 9 36.9	2.52
Aug. 1	8 53 36.98	0.626	18 8 37.0	2.53	1 0 13.0	8 53 37.13	0.625	18 8 36.4	2.53
2	8 53 52.02	0.627	18 7 36.3	2.53	2 0 9.3	8 53 52.13	0.625	18 7 35.8	2.53
3	8 54 7.06	0.627	18 6 35.5	2.53	3 0 5.6	8 54 7.13	0.625	18 6 35.2	2.53
4	8 54 22.11	0.627	18 5 34.8	2.53	4 0 2.0	8 54 22.14	0.625	18 5 34.7	2.53
					4 23 58.3	8 54 37.14	0.625	18 4 34.0	2.53
5	8 54 37.15	0.627	18 4 34.0	2.54	5 23 54.6	8 54 52.13	0.624	18 3 33.2	2.53
6	8 54 52.18	0.626	18 3 33.1	2.54	6 23 50.9	8 55 7.12	0.624	18 2 32.5	2.53
7	8 55 7.21	0.626	18 2 32.2	2.54	7 23 47.2	8 55 22.09	0.624	18 1 31.8	2.53
8	8 55 22.22	0.625	18 1 31.3	2.54	8 23 43.6	8 55 37.05	0.623	18 0 31.1	2.53
9	8 55 37.22	0.624	18 0 30.5	2.54	9 23 39.9	8 55 51.98	0.622	17 59 30.5	2.53
10	8 55 52.19	0.624	17 59 29.7	2.53	10 23 36.2	8 56 6.90	0.621	17 58 29.9	2.53
11	8 56 7.15	0.623	17 58 28.9	2.53	11 23 32.5	8 56 21.80	0.620	17 57 29.4	2.52
12	8 56 22.08	0.621	17 57 28.2	2.53	12 23 28.9	8 56 36.67	0.619	17 56 28.8	2.52
13	8 56 36.99	0.620	17 56 27.5	2.53	13 23 25.2	8 56 51.51	0.617	17 55 28.4	2.52
14	8 56 51.86	0.619	17 55 27.0	2.52	14 23 21.5	8 57 6.31	0.616	17 54 28.0	2.52
15	8 57 6.69	0.618	17 54 26.5	2.52	15 23 17.8	8 57 21.06	0.614	17 53 27.8	2.51
16	8 57 21.48	0.616	17 53 26.1	2.51	16 23 14.1	8 57 35.79	0.613	17 52 27.7	2.51
17	8 57 36.24	0.614	17 52 25.8	2.51	17 23 10.4	8 57 50.48	0.611	17 51 27.6	2.50
18	8 57 50.96	0.612	17 51 25.6	2.50	18 23 6.8	8 58 5.11	0.609	17 50 27.7	2.49
19	8 58 5.63	0.610	17 50 25.6	2.50	19 23 3.0	8 58 19.70	0.607	17 49 27.9	2.48
20	8 58 20.26	0.608	17 49 25.6	2.49	20 22 59.4	8 58 34.24	0.605	17 48 28.4	2.48
21	8 58 34.84	0.606	17 48 25.9	2.48	21 22 55.7	8 58 48.72	0.602	17 47 29.0	2.47
22	8 58 49.36	0.604	17 47 26.4	2.47	22 22 52.0	8 59 3.15	0.600	17 46 29.8	2.46
23	8 59 3.83	0.601	17 46 27.1	2.47	23 22 48.3	8 59 17.51	0.597	17 45 30.9	2.45
24	8 59 18.23	0.598	17 45 28.0	2.46	24 22 44.6	8 59 31.82	0.595	17 44 32.2	2.44
25	8 59 32.57	0.596	17 44 29.1	2.45	25 22 40.9	8 59 46.06	0.592	17 43 33.6	2.43
26	8 59 46.85	0.593	17 43 30.4	2.44	26 22 37.2	9 0 0.25	0.589	17 42 35.2	2.42
27	9 0 1.07	0.590	17 42 31.9	2.43	27 22 33.5	9 0 14.36	0.586	17 41 37.2	2.41
28	9 0 15.21	0.587	17 41 33.7	2.42	28 22 29.8	9 0 28.41	0.583	17 40 39.4	2.40
29	9 0 29.29	0.584	17 40 35.7	2.41	29 22 26.1	9 0 42.38	0.580	17 39 41.9	2.39
30	9 0 43.29	0.581	17 39 38.0	2.40	30 22 22.4	9 0 56.28	0.577	17 38 44.6	2.38
31	9 0 57.22	+0.578	+17 38 40.6	− 2.39	31 22 18.7	9 1 10.09	+0.573	+17 37 47.5	− 2.36

URANUS, 1874.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1874.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	9 1 11.06	+0.575	+17 37 43.4	− 2.37	1 22 15.0	9 1 23.83	+0.570	+17 36 50.8	− 2.35
2	9 1 24.83	0.572	17 36 46.6	2.36	2 22 11.3	9 1 37.48	0.566	17 35 54.5	2.33
3	9 1 38.51	0.568	17 35 50.2	2.34	3 22 7.6	9 1 51.04	0.563	17 34 58.5	2.32
4	9 1 52.10	0.565	17 34 54.1	2.33	4 22 3.9	9 2 4.51	0.559	17 34 2.8	2.31
5	9 2 5.60	0.561	17 33 58.3	2.32	5 22 0.2	9 2 17.90	0.556	17 33 7.5	2.30
6	9 2 19.01	0.557	17 33 2.9	2.30	6 21 56.5	9 2 31.18	0.552	17 32 12.5	2.28
7	9 2 32.32	0.553	17 32 7.8	2.28	7 21 52.8	9 2 44.37	0.548	17 31 18.0	2.26
8	9 2 45.54	0.549	17 31 13.2	2.27	8 21 49.0	9 2 57.46	0.544	17 30 23.8	2.24
9	9 2 58.65	0.544	17 30 18.9	2.25	9 21 45.3	9 3 10.44	0.540	17 29 30.1	2.23
10	9 3 11.65	0.540	17 29 25.1	2.23	10 21 41.6	9 3 23.31	0.535	17 28 36.7	2.21
11	9 3 24.55	0.536	17 28 31.6	2.21	11 21 37.9	9 3 36.09	0.530	17 27 43.9	2.19
12	9 3 37.35	0.531	17 27 38.7	2.19	12 21 34.1	9 3 48.75	0.525	17 26 51.5	2.17
13	9 3 50.03	0.526	17 26 46.2	2.17	13 21 30.4	9 4 1.29	0.520	17 25 59.6	2.15
14	9 4 2.59	0.521	17 25 54.2	2.15	14 21 26.7	9 4 13.71	0.515	17 25 8.1	2.13
15	9 4 15.03	0.516	17 25 2.6	2.13	15 21 23.0	9 4 26.01	0.510	17 24 17.2	2.11
16	9 4 27.35	0.511	17 24 11.6	2.11	16 21 19.2	9 4 38.18	0.505	17 23 26.7	2.09
17	9 4 39.54	0.505	17 23 21.0	2.09	17 21 15.5	9 4 50.24	0.500	17 22 36.7	2.07
18	9 4 51.61	0.500	17 22 31.0	2.07	18 21 11.8	9 5 2.16	0.494	17 21 47.2	2.05
19	9 5 3.55	0.494	17 21 41.4	2.05	19 21 8.1	9 5 13.95	0.489	17 20 58.2	2.03
20	9 5 15.36	0.489	17 20 52.3	2.03	20 21 4.3	9 5 25.61	0.483	17 20 9.8	2.00
21	9 5 27.04	0.484	17 20 3.9	2.00	21 21 0.6	9 5 37.15	0.478	17 19 21.8	1.97
22	9 5 38.59	0.478	17 19 15.9	1.98	22 20 56.8	9 5 48.35	0.472	17 18 34.5	1.95
23	9 5 50.00	0.472	17 18 28.5	1.96	23 20 53.1	9 5 59.80	0.466	17 17 47.9	1.93
24	9 6 1.26	0.466	17 17 41.8	1.94	24 20 49.3	9 6 10.91	0.460	17 17 1.7	1.91
25	9 6 12.38	0.460	17 16 55.6	1.91	25 20 45.6	9 6 21.88	0.454	17 16 16.1	1.89
26	9 6 23.36	0.454	17 16 10.0	1.89	26 20 41.8	9 6 32.72	0.448	17 15 31.2	1.86
27	9 6 34.20	0.448	17 15 25.0	1.86	27 20 38.1	9 6 43.40	0.442	17 14 46.9	1.84
28	9 6 44.89	0.442	17 14 40.7	1.84	28 20 34.3	9 6 53.91	0.435	17 14 3.2	1.81
29	9 6 55.41	0.435	17 13 57.0	1.81	29 20 30.6	9 7 4.29	0.429	17 13 20.2	1.78
30	9 7 5.79	0.429	17 13 14.0	1.78	30 20 26.8	9 7 14.51	0.422	17 12 38.0	1.75
Oct. 1	9 7 16.01	0.422	17 12 31.7	1.75	1 20 23.1	9 7 24.58	0.415	17 11 56.4	1.72
2	9 7 26.08	0.415	17 11 50.1	1.72	2 20 19.3	9 7 34.48	0.408	17 11 15.6	1.69
3	9 7 35.98	0.408	17 11 9.3	1.69	3 20 15.5	9 7 44.20	0.401	17 10 35.3	1.66
4	9 7 45.71	0.402	17 10 29.0	1.66	4 20 11.7	9 7 53.78	0.395	17 9 55.7	1.63
5	9 7 55.29	0.395	17 9 49.4	1.63	5 20 8.0	9 8 3.20	0.388	17 9 16.8	1.60
6	9 8 4.71	0.388	17 9 10.5	1.60	6 20 4.2	9 8 12.44	0.381	17 8 38.7	1.57
7	9 8 13.95	0.381	17 8 32.4	1.57	7 20 0.4	9 8 21.51	0.374	17 8 1.3	1.54
8	9 8 23.01	0.374	17 7 55.0	1.54	8 19 56.6	9 8 30.39	0.366	17 7 24.7	1.51
9	9 8 31.89	0.366	17 7 18.4	1.51	9 19 52.8	9 8 39.10	0.359	17 6 48.7	1.48
10	9 8 40.59	0.359	17 6 42.5	1.48	10 19 49.0	9 8 47.64	0.351	17 6 13.6	1.44
11	9 8 49.12	0.351	17 6 7.4	1.44	11 19 45.2	9 8 56.00	0.344	17 5 39.3	1.41
12	9 8 57.47	0.344	17 5 33.2	1.41	12 19 41.4	9 9 4.17	0.336	17 5 6.0	1.37
13	9 9 5.67	0.336	17 4 59.9	1.38	13 19 37.6	9 9 12.16	0.329	17 4 33.2	1.34
14	9 9 13.61	0.328	17 4 27.2	1.35	14 19 33.8	9 9 19.96	0.321	17 4 1.3	1.31
15	9 9 21.40	0.320	17 3 55.3	1.31	15 19 30.0	9 9 27.59	0.313	17 3 30.2	1.28
16	9 9 29.01	0.312	17 3 24.3	1.28	16 19 26.2	9 9 35.04	0.305	17 3 0.0	1.24
17	9 9 36.43	0.304	17 2 54.1	1.24	17 19 22.4	9 9 42.29	0.297	17 2 30.5	1.21
18	9 9 43.65	0.296	17 2 24.7	1.21	18 19 18.6	9 9 49.32	0.289	17 2 1.9	1.17
19	9 9 50.66	0.288	17 1 56.2	1.17	19 19 14.8	9 9 56.16	0.281	17 1 34.2	1.14
20	9 9 57.48	0.280	17 1 28.6	1.14	20 19 10.9	9 10 2.81	0.273	17 1 7.3	1.10
21	9 10 4.11	0.272	17 1 1.8	1.10	21 19 7.1	9 10 9.27	0.265	17 0 41.3	1.06
22	9 10 10.55	0.264	17 0 35.9	1.07	22 19 3.3	9 10 15.53	0.257	17 0 16.4	1.02
23	9 10 16.79	0.256	17 0 11.1	1.03	23 18 59.4	9 10 21.59	0.248	16 59 52.2	0.98
24	9 10 22.82	0.247	16 59 47.0	0.99	24 18 55.6	9 10 27.44	0.240	16 59 28.9	0.94
25	9 10 28.64	0.238	16 59 23.8	0.95	25 18 51.8	9 10 33.09	0.231	16 59 6.5	0.91
26	9 10 34.26	0.228	16 59 1.5	0.91	26 18 48.0	9 10 38.54	0.223	16 58 44.9	0.87
27	9 10 39.68	0.221	16 58 40.1	0.87	27 18 44.1	9 10 43.79	0.214	16 58 24.2	0.84
28	9 10 44.90	0.212	16 58 19.6	0.84	28 18 40.3	9 10 48.82	0.205	16 58 4.6	0.80
29	9 10 49.90	0.203	16 58 0.1	0.80	29 18 36.4	9 10 53.64	0.196	16 57 45.9	0.77
30	9 10 54.69	0.195	16 57 41.5	0.76	30 18 32.6	9 10 58.25	0.188	16 57 28.0	0.73
31	9 10 59.27	0.186	16 57 23.8	0.72	31 18 28.7	9 11 2.68	0.179	16 57 11.2	0.69
32	9 11 3.66	+0.178	+16 57 7.2	− 0.68	32 18 24.9	9 11 6.88	+0.170	+16 56 55.3	− 0.64

URANUS, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	9 11 3.66	+0.178	+16 57 7.2	− 0.68	1 18 24.9	9 11 6.88	+0.170	+16 56 55.3	− 0.64
2	9 11 7.82	0.169	16 56 51.5	0.64	2 18 21.0	9 11 10.87	0.161	16 56 40.3	0.60
3	9 11 11.77	0.161	16 56 36.7	0.60	3 18 17.1	9 11 14.63	0.152	16 56 26.3	0.56
4	9 11 15.49	0.151	16 56 22.9	0.55	4 18 13.2	9 11 18.18	0.143	16 56 13.2	0.52
5	9 11 19.00	0.142	16 56 10.0	0.51	5 18 9.4	9 11 21.51	0.134	16 56 1.1	0.48
6	9 11 22.29	0.133	16 55 58.1	0.47	6 18 5.5	9 11 24.61	0.125	16 55 49.9	0.44
7	9 11 25.37	0.124	16 55 47.1	0.43	7 18 1.6	9 11 27.50	0.116	16 55 39.7	0.40
8	9 11 28.21	0.114	16 55 37.1	0.39	8 17 57.7	9 11 30.20	0.107	16 55 30.5	0.36
9	9 11 30.84	0.105	16 55 28.1	0.35	9 17 53.8	9 11 32.66	0.098	16 55 22.3	0.32
10	9 11 33.25	0.096	16 55 20.1	0.31	10 17 49.9	9 11 34.90	0.089	16 55 15.1	0.28
11	9 11 35.44	0.087	16 55 13.1	0.27	11 17 46.0	9 11 36.92	0.080	16 55 8.8	0.24
12	9 11 37.41	0.078	16 55 7.0	0.23	12 17 42.1	9 11 38.71	0.071	16 55 3.4	0.20
13	9 11 39.14	0.068	16 55 1.9	0.19	13 17 38.2	9 11 40.28	0.062	16 54 59.1	0.16
14	9 11 40.66	0.058	16 54 57.8	0.15	14 17 34.3	9 11 41.62	0.053	16 54 55.8	0.12
15	9 11 41.95	0.049	16 54 54.7	0.11	15 17 30.4	9 11 42.76	0.044	16 54 53.4	0.08
16	9 11 43.03	0.040	16 54 52.6	0.07	16 17 26.5	9 11 43.67	0.033	16 54 52.0	− 0.04
17	9 11 43.88	0.031	16 54 51.5	− 0.03	17 17 22.6	9 11 44.35	0.024	16 54 51.6	0.00
18	9 11 44.50	0.022	16 54 51.3	+ 0.01	18 17 18.6	9 11 44.81	0.015	16 54 52.1	+ 0.04
19	9 11 44.90	0.013	16 54 52.1	0.05	19 17 14.7	9 11 45.05	+0.005	16 54 53.6	0.08
20	9 11 45.08	+0.003	16 54 53.9	0.09	20 17 10.8	9 11 45.08	−0.004	16 54 56.2	0.12
21	9 11 45.05	−0.006	16 54 56.8	0.13	21 17 6.9	9 11 44.88	0.013	16 54 59.8	0.16
22	9 11 44.79	0.015	16 55 0.6	0.17	22 17 2.9	9 11 44.46	0.022	16 55 4.3	0.21
23	9 11 44.31	0.026	16 55 5.4	0.21	23 16 59.0	9 11 43.82	0.031	16 55 9.8	0.25
24	9 11 43.60	0.034	16 55 11.2	0.26	24 16 55.0	9 11 42.96	0.040	16 55 16.2	0.29
25	9 11 42.67	0.043	16 55 17.9	0.30	25 16 51.1	9 11 41.88	0.049	16 55 23.6	0.33
26	9 11 41.52	0.052	16 55 25.6	0.34	26 16 47.1	9 11 40.58	0.058	16 55 32.0	0.37
27	9 11 40.15	0.061	16 55 34.3	0.38	27 16 43.2	9 11 39.07	0.067	16 55 41.4	0.41
28	9 11 38.57	0.071	16 55 44.0	0.42	28 16 39.2	9 11 37.34	0.076	16 55 51.6	0.44
29	9 11 36.77	0.080	16 55 54.6	0.46	29 16 35.3	9 11 35.38	0.085	16 56 2.9	0.48
30	9 11 34.74	0.089	16 56 6.2	0.50	30 16 31.3	9 11 33.21	0.094	16 56 15.2	0.52
Dec. 1	9 11 32.40	0.098	16 56 18.8	0.54	1 16 27.3	9 11 30.83	0.103	16 56 28.3	0.56
2	9 11 30.04	0.107	16 56 32.2	0.58	2 16 23.3	9 11 28.25	0.112	16 56 42.3	0.60
3	9 11 27.38	0.116	16 56 46.6	0.62	3 16 19.3	9 11 25.43	0.121	16 56 57.3	0.64
4	9 11 24.48	0.125	16 57 1.9	0.66	4 16 15.3	9 11 22.41	0.130	16 57 13.3	0.68
5	9 11 21.38	0.134	16 57 18.2	0.70	5 16 11.4	9 11 19.16	0.139	16 57 30.1	0.72
6	9 11 18.05	0.143	16 57 35.4	0.74	6 16 7.4	9 11 15.71	0.148	16 57 47.8	0.76
7	9 11 14.52	0.152	16 57 53.5	0.78	7 16 3.4	9 11 12.05	0.157	16 58 6.5	0.80
8	9 11 10.78	0.160	16 58 12.5	0.81	8 15 59.4	9 11 8.20	0.165	16 58 26.2	0.83
9	9 11 6.85	0.169	16 58 32.5	0.85	9 15 55.4	9 11 4.12	0.174	16 58 46.6	0.87
10	9 11 2.69	0.177	16 58 53.3	0.88	10 15 51.4	9 10 59.85	0.182	16 59 7.9	0.90
11	9 10 58.34	0.185	16 59 15.0	0.92	11 15 47.4	9 10 55.37	0.190	16 59 30.2	0.94
12	9 10 53.78	0.193	16 59 37.6	0.96	12 15 43.4	9 10 50.70	0.198	16 59 53.2	0.97
13	9 10 49.03	0.202	17 0 1.0	0.99	13 15 39.4	9 10 45.82	0.206	17 0 17.0	1.01
14	9 10 44.07	0.210	17 0 25.2	1.02	14 15 35.4	9 10 40.76	0.215	17 0 41.6	1.04
15	9 10 38.93	0.218	17 0 50.2	1.05	15 15 31.3	9 10 35.49	0.223	17 1 7.1	1.08
16	9 10 33.58	0.226	17 1 16.1	1.09	16 15 27.3	9 10 30.04	0.231	17 1 33.4	1.11
17	9 10 28.05	0.234	17 1 42.8	1.12	17 15 23.3	9 10 24.40	0.239	17 2 0.4	1.15
18	9 10 22.33	0.242	17 2 10.2	1.16	18 15 19.2	9 10 18.59	0.246	17 2 28.3	1.18
19	9 10 16.43	0.250	17 2 38.4	1.19	19 15 15.2	9 10 12.58	0.254	17 2 56.9	1.21
20	9 10 10.34	0.257	17 3 7.4	1.23	20 15 11.2	9 10 6.40	0.261	17 3 26.4	1.24
21	9 10 4.08	0.265	17 3 37.3	1.26	21 15 7.2	9 10 0.03	0.269	17 3 56.7	1.27
22	9 9 57.63	0.272	17 4 7.9	1.29	22 15 3.1	9 9 53.50	0.276	17 4 27.6	1.30
23	9 9 51.02	0.279	17 4 39.1	1.32	23 14 59.1	9 9 46.79	0.283	17 4 59.1	1.33
24	9 9 44.23	0.286	17 5 11.0	1.34	24 14 55.0	9 9 39.91	0.290	17 5 31.3	1.36
25	9 9 37.27	0.293	17 5 43.6	1.37	25 14 51.0	9 9 32.86	0.297	17 6 4.3	1.39
26	9 9 30.14	0.300	17 6 16.9	1.40	26 14 46.9	9 9 25.66	0.303	17 6 38.0	1.41
27	9 9 22.85	0.307	17 6 50.9	1.43	27 14 42.9	9 9 18.29	0.310	17 7 12.2	1.44
28	9 9 15.40	0.313	17 7 25.5	1.46	28 14 38.8	9 9 10.77	0.316	17 7 47.2	1.47
29	9 9 7.80	0.319	17 8 0.8	1.49	29 14 34.8	9 9 3.08	0.323	17 8 22.9	1.50
30	9 9 0.03	0.325	17 8 36.8	1.51	30 14 30.7	9 8 55.25	0.329	17 8 59.2	1.52
31	9 8 52.11	0.331	17 9 13.4	1.54	31 14 26.6	9 8 47.27	0.335	17 9 35.9	1.55
32	9 8 44.05	−0.338	+17 9 50.5	+ 1.56	32 14 22.5	9 8 39.15	−0.341	+17 10 13.1	+ 1.57

NEPTUNE, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	1 38 7.41	−0.026	+ 8 19 55.3	+ 0.00	1 6 52.3	1 38 7.24	−0.025	+ 8 19 55.3	+ 0.01
2	1 38 6.84	0.021	8 19 55.7	0.03	2 6 48.3	1 38 6.70	0.019	8 19 55.9	0.04
3	1 38 6.40	0.016	8 19 56.8	0.06	3 6 44.4	1 38 6.29	0.014	8 19 57.3	0.07
4	1 38 6.08	0.010	8 19 58.7	0.10	4 6 40.5	1 38 6.01	0.009	8 19 59.4	0.10
5	1 38 5.90	−0.005	8 20 1.4	0.13	5 6 36.5	1 38 5.87	−0.003	8 20 2.3	0.14
6	1 38 5.85	+0.001	8 20 4.9	0.16	6 6 32.6	1 38 5.86	+0.002	8 20 5.9	0.17
7	1 38 5.93	0.006	8 20 9.1	0.19	7 6 28.7	1 38 5.97	0.007	8 20 10.3	0.20
8	1 38 6.14	0.011	8 20 14.0	0.22	8 6 24.7	1 38 6.21	0.013	8 20 15.4	0.23
9	1 38 6.48	0.017	8 20 19.7	0.25	9 6 20.8	1 38 6.58	0.018	8 20 21.3	0.26
10	1 38 6.95	0.022	8 20 26.2	0.29	10 6 16.9	1 38 7.09	0.024	8 20 28.0	0.30
11	1 38 7.56	0.028	8 20 33.5	0.32	11 6 13.0	1 38 7.73	0.029	8 20 35.5	0.33
12	1 38 8.29	0.033	8 20 41.5	0.35	12 6 9.0	1 38 8.50	0.035	8 20 43.7	0.36
13	1 38 9.16	0.039	8 20 50.3	0.38	13 6 5.1	1 38 9.40	0.040	8 20 52.6	0.39
14	1 38 10.16	0.044	8 20 59.8	0.41	14 6 1.2	1 38 10.43	0.046	8 21 2.3	0.42
15	1 38 11.29	0.050	8 21 10.1	0.44	15 5 57.3	1 38 11.59	0.051	8 21 12.8	0.45
16	1 38 12.56	0.056	8 21 21.2	0.48	16 5 53.4	1 38 12.89	0.057	8 21 24.0	0.48
17	1 38 13.96	0.061	8 21 33.0	0.51	17 5 49.5	1 38 14.32	0.062	8 21 36.0	0.51
18	1 38 15.49	0.066	8 21 45.6	0.54	18 5 45.6	1 38 15.88	0.067	8 21 48.7	0.54
19	1 38 17.14	0.072	8 21 58.9	0.57	19 5 41.7	1 38 17.56	0.073	8 22 2.1	0.57
20	1 38 18.93	0.077	8 22 12.9	0.60	20 5 37.8	1 38 19.37	0.078	8 22 16.3	0.60
21	1 38 20.85	0.083	8 22 27.7	0.63	21 5 33.9	1 38 21.31	0.083	8 22 31.2	0.63
22	1 38 22.90	0.088	8 22 43.2	0.66	22 5 30.0	1 38 23.38	0.089	8 22 46.8	0.66
23	1 38 25.08	0.093	8 22 59.5	0.69	23 5 26.1	1 38 25.59	0.095	8 23 3.2	0.70
24	1 38 27.39	0.099	8 23 16.5	0.72	24 5 22.2	1 38 27.93	0.100	8 23 20.4	0.73
25	1 38 29.83	0.104	8 23 34.3	0.75	25 5 18.3	1 38 30.39	0.105	8 23 38.3	0.76
26	1 38 32.40	0.109	8 23 52.8	0.78	26 5 14.4	1 38 32.98	0.110	8 23 56.9	0.79
27	1 38 35.09	0.115	8 24 12.0	0.81	27 5 10.5	1 38 35.69	0.115	8 24 16.2	0.82
28	1 38 37.91	0.120	8 24 31.8	0.84	28 5 6.6	1 38 38.52	0.120	8 24 36.1	0.84
29	1 38 40.85	0.125	8 24 52.3	0.87	29 5 2.7	1 38 41.48	0.126	8 24 56.7	0.87
30	1 38 43.91	0.130	8 25 13.6	0.90	30 4 58.9	1 38 44.56	0.131	8 25 18.1	0.90
31	1 38 47.10	0.135	8 25 35.6	0.93	31 4 55.0	1 38 47.77	0.136	8 25 40.2	0.93
Feb. 1	1 38 50.41	0.140	8 25 58.2	0.95	1 4 51.1	1 38 51.10	0.141	8 26 2.9	0.96
2	1 38 53.85	0.145	8 26 21.5	0.98	2 4 47.2	1 38 54.55	0.146	8 26 26.2	0.98
3	1 38 57.40	0.150	8 26 45.4	1.01	3 4 43.4	1 38 58.11	0.151	8 26 50.2	1.01
4	1 39 1.07	0.155	8 27 10.0	1.04	4 4 39.5	1 39 1.80	0.156	8 27 14.9	1.04
5	1 39 4.87	0.160	8 27 35.3	1.06	5 4 35.6	1 39 5.61	0.161	8 27 40.2	1.07
6	1 39 8.78	0.165	8 28 1.2	1.09	6 4 31.8	1 39 9.53	0.166	8 28 6.2	1.09
7	1 39 12.81	0.170	8 28 27.8	1.12	7 4 27.9	1 39 13.57	0.171	8 28 32.8	1.12
8	1 39 16.96	0.175	8 28 55.0	1.14	8 4 24.0	1 39 17.73	0.175	8 29 0.0	1.15
9	1 39 21.22	0.180	8 29 22.8	1.17	9 4 20.2	1 39 22.00	0.180	8 29 27.9	1.17
10	1 39 25.60	0.184	8 29 51.3	1.20	10 4 16.3	1 39 26.39	0.185	8 29 56.4	1.20
11	1 39 30.09	0.189	8 30 20.4	1.22	11 4 12.5	1 39 30.88	0.189	8 30 25.5	1.22
12	1 39 34.69	0.194	8 30 50.1	1.25	12 4 8.6	1 39 35.49	0.194	8 30 55.2	1.25
13	1 39 39.41	0.198	8 31 20.4	1.27	13 4 4.8	1 39 40.22	0.199	8 31 25.6	1.28
14	1 39 44.23	0.203	8 31 51.3	1.30	14 4 0.9	1 39 45.05	0.203	8 31 56.5	1.30
15	1 39 49.17	0.208	8 32 22.8	1.32	15 3 57.1	1 39 49.99	0.208	8 32 28.0	1.33
16	1 39 54.21	0.212	8 32 54.9	1.35	16 3 53.2	1 39 55.03	0.212	8 33 0.1	1.35
17	1 39 59.36	0.216	8 33 27.6	1.37	17 3 49.4	1 40 0.18	0.216	8 33 32.8	1.37
18	1 40 4.62	0.221	8 34 0.8	1.39	18 3 45.5	1 40 5.44	0.221	8 34 6.1	1.40
19	1 40 9.98	0.225	8 34 34.6	1.42	19 3 41.7	1 40 10.81	0.225	8 34 39.9	1.42
20	1 40 15.45	0.229	8 35 9.0	1.44	20 3 37.8	1 40 16.28	0.229	8 35 14.3	1.44
21	1 40 21.02	0.233	8 35 43.9	1.46	21 3 34.0	1 40 21.85	0.233	8 35 49.2	1.46
22	1 40 26.68	0.237	8 36 19.2	1.48	22 3 30.2	1 40 27.51	0.237	8 36 24.5	1.48
23	1 40 32.44	0.242	8 36 55.0	1.50	23 3 26.3	1 40 33.27	0.242	8 37 0.3	1.50
24	1 40 38.31	0.246	8 37 31.4	1.52	24 3 22.5	1 40 39.13	0.246	8 37 36.6	1.52
25	1 40 44.27	0.250	8 38 8.3	1.54	25 3 18.7	1 40 45.09	0.250	8 38 13.4	1.54
26	1 40 50.32	0.253	8 38 45.7	1.56	26 3 14.8	1 40 51.14	0.254	8 38 50.8	1.56
27	1 40 56.46	0.257	8 39 23.5	1.58	27 3 11.0	1 40 57.28	0.257	8 39 28.6	1.58
28	1 41 2.68	0.261	8 40 1.8	1.60	28 3 7.2	1 41 3.50	0.261	8 40 6.8	1.60
29	1 41 9.00	+0.265	+ 8 40 40.5	+ 1.62	29 3 3.4	1 41 9.81	+0.265	+ 8 40 45.5	+ 1.62

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	1 41 9.00	+0.265	+ 8 40 40.5	+ 1.62	1 3 3.4	1 41 9.81	+0.265	+ 8 40 45.5	+ 1.62
2	1 41 15.41	0.268	8 41 19.7	1.64	2 2 59.5	1 41 16.21	0.268	8 41 24.6	1.63
3	1 41 21.90	0.272	8 41 59.3	1.66	3 2 55.7	1 41 22.70	0.272	8 41 4.1	1.65
4	1 41 28.48	0.276	8 42 39.3	1.67	4 2 51.9	1 41 29.27	0.275	8 42 44.1	1.67
5	1 41 35.14	0.279	8 43 19.8	1.69	5 2 48.0	1 41 35.92	0.279	8 43 24.5	1.69
6	1 41 41.88	0.282	8 44 0.7	1.71	6 2 44.2	1 41 42.65	0.281	8 44 5.4	1.71
7	1 41 48.70	0.285	8 44 42.0	1.73	7 2 40.4	1 41 49.46	0.285	8 44 46.6	1.72
8	1 41 55.60	0.289	8 45 23.7	1.74	8 2 36.6	1 41 56.35	0.289	8 45 28.2	1.74
9	1 42 2.58	0.292	8 46 5.7	1.76	9 2 32.8	1 42 3.32	0.292	8 46 10.2	1.75
10	1 42 9.63	0.295	8 46 48.1	1.77	10 2 29.0	1 42 10.36	0.295	8 46 52.5	1.77
11	1 42 16.76	0.298	8 47 30.8	1.78	11 2 25.1	1 42 17.48	0.298	8 47 35.1	1.78
12	1 42 23.96	0.301	8 48 13.9	1.80	12 2 21.3	1 42 24.67	0.301	8 48 18.1	1.80
13	1 42 31.22	0.304	8 48 57.3	1.81	13 2 17.5	1 42 31.92	0.303	8 49 1.5	1.81
14	1 42 38.55	0.307	8 49 41.1	1.83	14 2 13.7	1 42 39.24	0.306	8 49 45.2	1.82
15	1 42 45.96	0.310	8 50 25.2	1.84	15 2 9.9	1 42 46.63	0.309	8 50 29.2	1.84
16	1 42 53.44	0.312	8 51 9.6	1.85	16 2 6.1	1 42 54.09	0.312	8 51 13.5	1.85
17	1 43 0.98	0.315	8 51 54.3	1.87	17 2 2.3	1 43 1.61	0.314	8 51 58.1	1.86
18	1 43 8.57	0.317	8 52 39.3	1.88	18 1 58.5	1 43 9.19	0.316	8 52 43.0	1.87
19	1 43 16.22	0.319	8 53 24.5	1.89	19 1 54.7	1 43 16.83	0.319	8 52 28.1	1.88
20	1 43 23.93	0.322	8 54 10.0	1.90	20 1 50.9	1 43 24.53	0.321	8 54 13.5	1.89
21	1 43 31.70	0.324	8 54 55.7	1.91	21 1 47.1	1 43 32.28	0.323	8 54 59.1	1.90
22	1 43 39.52	0.327	8 55 41.7	1.92	22 1 43.3	1 43 40.08	0.326	8 55 45.0	1.91
23	1 43 47.39	0.329	8 56 27.9	1.93	23 1 39.5	1 43 47.94	0.328	8 56 31.1	1.92
24	1 43 55.31	0.331	8 57 14.3	1.94	24 1 35.7	1 43 55.84	0.330	8 57 17.4	1.93
25	1 44 3.28	0.333	8 58 0.9	1.94	25 1 31.9	1 44 3.79	0.332	8 58 3.9	1.94
26	1 44 11.30	0.334	8 58 47.7	1.95	26 1 28.1	1 44 11.79	0.333	8 58 50.6	1.95
27	1 44 19.36	0.336	8 59 34.7	1.96	27 1 24.3	1 44 19.83	0.335	8 59 37.5	1.95
28	1 44 27.46	0.338	9 0 21.8	1.96	28 1 20.5	1 44 27.91	0.337	9 0 24.5	1.96
29	1 44 35.61	0.340	9 1 9.1	1.97	29 1 16.7	1 44 36.04	0.339	9 1 11.6	1.96
30	1 44 43.79	0.341	9 1 56.5	1.98	30 1 12.9	1 44 44.20	0.340	9 1 58.9	1.97
31	1 44 52.01	0.343	9 2 44.1	1.98	31 1 9.1	1 44 52.40	0.342	9 2 46.4	1.98
Apr. 1	1 45 0.27	0.344	9 3 31.8	1.99	1 1 5.3	1 45 0.64	0.343	9 3 34.0	1.98
2	1 45 8.56	0.345	9 4 19.6	1.99	2 1 1.5	1 45 8.91	0.344	9 4 21.6	1.98
3	1 45 16.87	0.346	9 5 7.5	1.99	3 0 57.7	1 45 17.20	0.345	9 5 9.4	1.99
4	1 45 25.22	0.347	9 5 55.5	2.00	4 0 53.9	1 45 25.53	0.347	9 5 57.3	1.99
5	1 45 33.60	0.348	9 6 43.6	2.00	5 0 50.1	1 45 33.89	0.348	9 6 45.3	2.00
6	1 45 42.00	0.349	9 7 31.8	2.00	6 0 46.3	1 45 42.27	0.349	9 7 33.4	2.00
7	1 45 50.43	0.351	9 8 20.0	2.01	7 0 42.5	1 45 50.68	0.350	9 8 21.5	2.00
8	1 45 58.89	0.352	9 9 8.3	2.01	8 0 38.7	1 45 59.12	0.351	9 9 9.6	2.00
9	1 46 7.37	0.353	9 9 56.6	2.01	9 0 34.9	1 46 7.57	0.352	9 9 57.8	2.01
10	1 46 15.86	0.354	9 10 45.0	2.01	10 0 31.1	1 46 16.04	0.353	9 10 46.0	2.01
11	1 46 24.37	0.355	9 11 33.4	2.01	11 0 27.3	1 46 24.53	0.354	9 11 34.3	2.01
12	1 46 32.90	0.355	9 12 21.8	2.01	12 0 23.6	1 46 33.04	0.354	9 12 22.6	2.01
13	1 46 41.44	0.356	9 13 10.2	2.01	13 0 19.8	1 46 41.56	0.355	9 13 10.9	2.01
14	1 46 50.00	0.356	9 13 58.6	2.01	14 0 15.0	1 46 50.09	0.355	9 13 59.1	2.01
15	1 46 58.56	0.356	9 14 46.9	2.01	15 0 12.2	1 46 58.63	0.356	9 14 47.3	2.01
16	1 47 7.13	0.357	9 15 35.2	2.01	16 0 8.4	1 47 7.18	0.356	9 15 35.5	2.00
17	1 47 15.70	0.357	9 16 23.5	2.01	17 0 4.6	1 47 15.73	0.356	9 16 23.6	2.00
18	1 47 24.28	0.357	9 17 11.7	2.00	18 0 0.8	1 47 24.28	0.356	9 17 11.7	2.00
					18 23 57.0	1 47 32.84	0.356	9 17 59.7	2.00
19	1 47 32.86	0.357	9 17 59.8	2.00	19 23 53.3	1 47 41.41	0.356	9 18 47.7	1.99
20	1 47 41.45	0.357	9 18 47.9	2.00	20 23 49.5	1 47 49.97	0.356	9 19 35.5	1.99
21	1 47 50.03	0.357	9 19 35.9	1.99	21 23 45.7	1 47 58.51	0.355	9 20 23.3	1.98
22	1 47 58.60	0.356	9 20 23.8	1.99	22 23 41.9	1 48 7.05	0.355	9 21 10.9	1.98
23	1 48 7.16	0.356	9 21 11.5	1.98	23 23 38.1	1 48 15.59	0.355	9 21 58.4	1.97
24	1 48 15.72	0.356	9 21 59.1	1.98	24 23 34.3	1 48 24.13	0.355	9 22 45.7	1.97
25	1 48 24.28	0.356	9 22 46.6	1.97	25 23 30.5	1 48 32.65	0.354	9 23 32.9	1.96
26	1 48 32.82	0.355	9 23 33.9	1.97	26 23 26.7	1 48 41.15	0.353	9 24 20.0	1.96
27	1 48 41.34	0.354	9 24 21.1	1.96	27 23 22.9	1 48 49.63	0.353	9 25 7.0	1.95
28	1 48 49.85	0.354	9 25 8.2	1.96	28 23 19.1	1 48 58.10	0.352	9 25 53.8	1.94
29	1 48 58.34	0.353	9 25 55.1	1.95	29 23 15.4	1 49 6.56	0.352	9 26 40.4	1.93
30	1 49 6.82	+0.352	+ 9 26 41.8	+ 1.94	30 23 11.6	1 49 15.00	+0.351	+ 9 27 26.7	+ 1.92

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	1 49 15.28	+0.352	+ 9 27 28.3	+ 1.93	1 23 7.8	1 49 23.40	+0.349	+ 9 28 12.9	+ 1.92
2	1 49 23.71	0.350	9 28 14.6	1.92	2 23 4.0	1 49 31.78	0.348	9 28 58.9	1.91
3	1 49 32.11	0.349	9 29 0.7	1.91	3 23 0.2	1 49 40.14	0.347	9 29 44.7	1.90
4	1 49 40.49	0.348	9 29 46.6	1.90	4 22 56.4	1 49 48.48	0.346	9 30 30.2	1.89
5	1 49 48.85	0.347	9 30 32.2	1.89	5 22 52.6	1 49 56.79	0.345	9 31 15.5	1.88
6	1 49 57.18	0.346	9 31 17.6	1.88	6 22 48.8	1 50 5.07	0.344	9 32 0.6	1.87
7	1 50 5.48	0.344	9 32 2.8	1.87	7 22 45.0	1 50 13.31	0.342	9 32 45.4	1.86
8	1 50 13.74	0.343	9 32 47.7	1.86	8 22 41.2	1 50 21.52	0.341	9 33 29.9	1.85
9	1 50 21.97	0.342	9 33 32.3	1.85	9 22 37.4	1 50 29.69	0.339	9 34 14.2	1.84
10	1 50 30.16	0.340	9 34 16.7	1.84	10 22 33.6	1 50 37.82	0.338	9 34 58.2	1.82
11	1 50 38.31	0.338	9 35 0.8	1.83	11 22 29.8	1 50 45.92	0.336	9 35 41.9	1.81
12	1 50 46.43	0.337	9 35 44.6	1.82	12 22 26.0	1 50 53.98	0.334	9 36 25.3	1.80
13	1 50 54.51	0.335	9 36 28.1	1.80	13 22 22.2	1 51 1.99	0.332	9 37 8.4	1.79
14	1 51 2.54	0.333	9 37 11.3	1.79	14 22 18.4	1 51 9.95	0.330	9 37 51.2	1.77
15	1 51 10.52	0.331	9 37 54.2	1.78	15 22 14.6	1 51 17.87	0.329	9 38 33.6	1.76
16	1 51 18.46	0.329	9 38 36.7	1.76	16 22 10.8	1 51 25.75	0.327	9 39 15.7	1.74
17	1 51 26.35	0.327	9 39 18.9	1.75	17 22 7.0	1 51 33.58	0.325	9 39 57.4	1.73
18	1 51 34.19	0.325	9 40 0.7	1.73	18 22 3.2	1 51 41.35	0.322	9 40 38.8	1.72
19	1 51 41.98	0.323	9 40 42.2	1.72	19 21 59.4	1 51 49.07	0.320	9 41 19.9	1.70
20	1 51 49.71	0.321	9 41 23.3	1.70	20 21 55.6	1 51 56.73	0.318	9 42 0.5	1.68
21	1 51 57.39	0.318	9 42 4.0	1.68	21 21 51.8	1 52 4.33	0.315	9 42 40.7	1.67
22	1 52 5.01	0.316	9 42 44.3	1.67	22 21 48.0	1 52 11.88	0.313	9 43 20.6	1.65
23	1 52 12.57	0.314	9 43 24.3	1.65	23 21 44.2	1 52 19.37	0.310	9 44 0.1	1.63
24	1 52 20.07	0.311	9 44 3.8	1.63	24 21 40.4	1 52 26.80	0.308	9 44 39.2	1.62
25	1 52 27.51	0.308	9 44 42.9	1.62	25 21 36.6	1 52 34.16	0.305	9 45 17.8	1.60
26	1 52 34.88	0.305	9 45 21.6	1.60	26 21 32.8	1 52 41.45	0.302	9 45 56.0	1.58
27	1 52 42.19	0.303	9 45 59.9	1.58	27 21 29.0	1 52 48.68	0.300	9 46 33.8	1.56
28	1 52 49.43	0.300	9 46 37.8	1.57	28 21 25.2	1 52 55.84	0.297	9 47 11.2	1.54
29	1 52 56.61	0.297	9 47 15.2	1.55	29 21 21.3	1 53 2.94	0.294	9 47 48.1	1.53
30	1 53 3.72	0.294	9 47 52.2	1.53	30 21 17.5	1 53 9.96	0.291	9 48 24.6	1.51
31	1 53 10.75	0.291	9 48 28.7	1.51	31 21 13.7	1 53 16.91	0.288	9 49 0.6	1.49
June 1	1 53 17.71	0.288	9 49 4.7	1.49	1 21 9.9	1 53 23.79	0.285	9 49 36.1	1.47
2	1 53 24.60	0.285	9 49 40.3	1.47	2 21 6.1	1 53 30.59	0.281	9 50 11.2	1.45
3	1 53 31.41	0.282	9 50 15.4	1.45	3 21 2.3	1 53 37.32	0.278	9 50 45.9	1.43
4	1 53 38.15	0.279	9 50 50.1	1.43	4 20 58.4	1 53 43.97	0.275	9 51 20.0	1.41
5	1 53 44.81	0.275	9 51 24.3	1.41	5 20 54.6	1 53 50.54	0.272	9 51 53.6	1.39
6	1 53 51.38	0.272	9 51 57.9	1.39	6 20 50.8	1 53 57.03	0.268	9 52 26.7	1.37
7	1 53 57.88	0.269	9 52 31.0	1.37	7 20 47.0	1 54 3.44	0.265	9 52 59.4	1.35
8	1 54 4.30	0.265	9 53 3.7	1.35	8 20 43.1	1 54 9.77	0.262	9 53 31.5	1.32
9	1 54 10.63	0.262	9 53 35.8	1.32	9 20 39.3	1 54 16.01	0.258	9 54 3.1	1.30
10	1 54 16.88	0.258	9 54 7.4	1.30	10 20 35.5	1 54 22.17	0.254	9 54 34.2	1.28
11	1 54 23.04	0.254	9 54 38.5	1.28	11 20 31.6	1 54 28.24	0.251	9 55 4.7	1.26
12	1 54 29.11	0.251	9 55 9.0	1.26	12 20 27.8	1 54 34.22	0.247	9 55 34.6	1.23
13	1 54 35.09	0.247	9 55 39.0	1.24	13 20 24.0	1 54 40.11	0.243	9 56 4.0	1.21
14	1 54 40.98	0.243	9 56 8.4	1.21	14 20 20.1	1 54 45.90	0.239	9 56 32.9	1.19
15	1 54 46.78	0.239	9 56 37.3	1.19	15 20 16.3	1 54 51.60	0.235	9 57 1.2	1.17
16	1 54 52.48	0.235	9 57 5.6	1.16	16 20 12.4	1 54 57.21	0.231	9 57 29.0	1.14
17	1 54 58.08	0.231	9 57 33.3	1.14	17 20 8.6	1 55 2.72	0.227	9 57 56.2	1.12
18	1 55 3.59	0.227	9 58 0.5	1.12	18 20 4.8	1 55 8.13	0.223	9 58 22.8	1.09
19	1 55 9.01	0.223	9 58 27.1	1.09	19 20 0.9	1 55 13.45	0.219	9 58 48.8	1.07
20	1 55 14.32	0.219	9 58 53.1	1.07	20 19 57.1	1 55 18.67	0.215	9 59 14.3	1.05
21	1 55 19.53	0.215	9 59 18.5	1.04	21 19 53.3	1 55 23.78	0.210	9 59 39.2	1.02
22	1 55 24.64	0.210	9 59 43.3	1.02	22 19 49.4	1 55 28.79	0.206	10 0 3.4	0.99
23	1 55 29.65	0.206	10 0 7.5	0.99	23 19 45.6	1 55 33.70	0.202	10 0 27.0	0.97
24	1 55 34.56	0.202	10 0 31.1	0.97	24 19 41.7	1 55 38.51	0.198	10 0 50.1	0.95
25	1 55 39.36	0.197	10 0 54.1	0.94	25 19 37.8	1 55 43.22	0.194	10 1 12.5	0.92
26	1 55 44.06	0.193	10 1 16.5	0.92	26 19 34.0	1 55 47.82	0.189	10 1 34.3	0.89
27	1 55 48.65	0.189	10 1 38.2	0.89	27 19 30.1	1 55 52.31	0.184	10 1 55.5	0.87
28	1 55 53.13	0.184	10 1 59.3	0.87	28 19 26.3	1 55 56.69	0.180	10 2 16.0	0.84
29	1 55 57.51	0.180	10 2 19.8	0.84	29 19 22.4	1 56 0.97	0.176	10 2 35.9	0.82
30	1 56 1.78	0.175	10 2 39.7	0.82	30 19 18.5	1 56 5.14	0.171	10 2 55.3	0.79
31	1 56 5.94	+0.171	+10 2 59.0	+ 0.79	31 19 14.7	1 56 9.19	+0.166	+10 3 14.0	+ 0.76

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	1 56 5.94	+0.171	+10 2 59.0	+ 0.79	1 19 14.7	1 56 9.19	+0.166	+10 3 14.0	+ 0.76
2	1 56 9.98	0.166	10 3 17.6	0.76	2 19 10.8	1 56 13.14	0.162	10 3 32.1	0.74
3	1 56 13.92	0.162	10 3 35.6	0.73	3 19 6.9	1 56 16.98	0.157	10 3 49.5	0.71
4	1 56 17.75	0.157	10 3 52.9	0.71	4 19 3.1	1 56 20.71	0.153	10 4 6.2	0.68
5	1 55 21.46	0.152	10 4 9.6	0.68	5 18 59.2	1 56 24.32	0.148	10 4 22.3	0.66
6	1 56 25.06	0.147	10 4 25.6	0.65	6 18 55.3	1 56 27.82	0.143	10 4 37.8	0.63
7	1 56 28.55	0.142	10 4 41.0	0.63	7 18 51.4	1 56 31.20	0.138	10 4 52.6	0.60
8	1 56 31.91	0.137	10 4 55.7	0.60	8 18 47.5	1 56 34.47	0.134	10 5 6.8	0.58
9	1 56 35.16	0.133	10 5 9.8	0.57	9 18 43.7	1 56 37.62	0.129	10 5 20.4	0.55
10	1 56 38.29	0.128	10 5 23.2	0.54	10 18 39.8	1 56 40.65	0.124	10 5 33.2	0.52
11	1 56 41.30	0.123	10 5 35.9	0.51	11 18 35.9	1 56 43.56	0.119	10 5 45.3	0.49
12	1 56 44.20	0.118	10 5 47.9	0.49	12 18 32.0	1 56 46.35	0.114	10 5 56.8	0.46
13	1 56 46.97	0.113	10 5 59.3	0.46	13 18 28.1	1 56 49.02	0.109	10 6 7.6	0.44
14	1 56 49.62	0.108	10 6 10.0	0.43	14 18 24.3	1 56 51.57	0.104	10 6 17.8	0.41
15	1 56 52.15	0.103	10 6 20.0	0.40	15 18 20.4	1 56 54.00	0.099	10 6 27.2	0.38
16	1 56 54.56	0.098	10 6 29.3	0.37	16 18 16.5	1 56 56.31	0.094	10 6 35.9	0.35
17	1 56 56.85	0.093	10 6 37.9	0.35	17 18 12.6	1 56 58.50	0.088	10 6 44.0	0.32
18	1 56 59.01	0.087	10 6 45.9	0.32	18 18 8.7	1 57 0.56	0.083	10 6 51.4	0.30
19	1 57 1.05	0.082	10 6 53.2	0.29	19 18 4.8	1 57 2.50	0.078	10 6 58.2	0.27
20	1 57 2.97	0.077	10 6 59.8	0.26	20 18 0.9	1 57 4.33	0.073	10 7 4.3	0.24
21	1 57 4.77	0.072	10 7 5.7	0.23	21 17 57.0	1 57 6.03	0.068	10 7 9.7	0.21
22	1 57 6.44	0.067	10 7 10.9	0.20	22 17 53.1	1 57 7.60	0.063	10 7 14.4	0.18
23	1 57 7.99	0.062	10 7 15.5	0.18	23 17 49.2	1 57 9.05	0.058	10 7 18.5	0.16
24	1 57 9.41	0.057	10 7 19.4	0.15	24 17 45.3	1 57 10.38	0.053	10 7 21.9	0.13
25	1 57 10.71	0.052	10 7 22.6	0.12	25 17 41.3	1 57 11.59	0.048	10 7 24.6	0.10
26	1 57 11.89	0.046	10 7 25.1	0.09	26 17 37.4	1 57 12.67	0.042	10 7 26.5	0.07
27	1 57 12.94	0.041	10 7 26.9	0.06	27 17 33.5	1 57 13.63	0.037	10 7 27.8	0.04
28	1 57 13.87	0.036	10 7 28.0	0.03	28 17 29.6	1 57 14.46	0.032	10 7 28.4	+ 0.01
29	1 57 14.67	0.031	10 7 28.5	+ 0.01	29 17 25.7	1 57 15.17	0.027	10 7 28.4	- 0.01
30	1 57 15.35	0.026	10 7 28.3	- 0.02	30 17 21.8	1 57 15.75	0.022	10 7 27.7	0.04
31	1 57 15.90	0.020	10 7 27.4	0.05	31 17 17.8	1 57 16.21	0.017	10 7 26.3	0.07
Aug. 1	1 57 16.32	0.015	10 7 25.8	0.08	1 17 13.9	1 57 16.55	0.011	10 7 24.2	0.10
2	1 57 16.62	0.010	10 7 23.5	0.11	2 17 10.0	1 57 16.76	0.006	10 7 21.5	0.13
3	1 57 16.80	+0.005	10 7 20.6	0.14	3 17 6.0	1 57 16.85	+0.001	10 7 18.1	0.16
4	1 57 16.85	-0.001	10 7 17.0	0.16	4 17 2.1	1 57 16.81	-0.004	10 7 14.0	0.18
5	1 57 16.77	0.006	10 7 12.7	0.19	5 16 58.2	1 57 16.64	0.009	10 7 9.2	0.21
6	1 57 16.57	0.011	10 7 7.7	0.22	6 16 54.3	1 57 16.35	0.014	10 7 3.7	0.24
7	1 57 16.24	0.016	10 7 2.0	0.25	7 16 50.3	1 57 15.94	0.020	10 6 57.6	0.27
8	1 57 15.79	0.022	10 6 55.7	0.28	8 16 46.4	1 57 15.40	0.025	10 6 50.8	0.30
9	1 57 15.21	0.027	10 6 48.7	0.31	9 16 42.4	1 57 14.74	0.030	10 6 43.3	0.33
10	1 57 14.51	0.032	10 6 41.0	0.33	10 16 38.5	1 57 13.95	0.035	10 6 35.1	0.35
11	1 57 13.69	0.037	10 6 32.6	0.36	11 16 34.5	1 57 13.04	0.040	10 6 26.3	0.38
12	1 57 12.74	0.042	10 6 23.6	0.39	12 16 30.6	1 57 12.00	0.045	10 6 16.9	0.40
13	1 57 11.66	0.047	10 6 14.0	0.41	13 16 26.6	1 57 10.84	0.050	10 6 6.9	0.43
14	1 57 10.46	0.052	10 6 3.7	0.44	14 16 22.7	1 57 9.56	0.055	10 5 56.2	0.46
15	1 57 9.14	0.057	10 5 52.7	0.47	15 16 18.7	1 57 8.17	0.060	10 5 44.9	0.49
16	1 57 7.70	0.062	10 5 41.1	0.50	16 16 14.8	1 57 6.65	0.065	10 5 32.9	0.51
17	1 57 6.14	0.067	10 5 28.8	0.52	17 16 10.8	1 57 5.02	0.070	10 5 20.2	0.54
18	1 57 4.46	0.072	10 5 15.9	0.55	18 16 6.8	1 57 3.26	0.075	10 5 6.9	0.57
19	1 57 2.66	0.077	10 5 2.3	0.58	19 16 2.9	1 57 1.39	0.080	10 4 53.0	0.59
20	1 57 0.74	0.082	10 4 48.2	0.60	20 15 58.9	1 56 59.40	0.085	10 4 38.5	0.62
21	1 56 58.70	0.087	10 4 33.4	0.63	21 15 54.9	1 56 57.29	0.090	10 4 23.4	0.64
22	1 56 56.55	0.092	10 4 18.1	0.65	22 15 51.0	1 56 55.06	0.095	10 4 7.6	0.67
23	1 56 54.28	0.097	10 4 2.1	0.68	23 15 47.0	1 56 52.72	0.100	10 3 51.3	0.69
24	1 56 51.90	0.101	10 3 45.5	0.70	24 15 43.0	1 56 50.27	0.104	10 3 34.4	0.72
25	1 56 49.40	0.106	10 3 28.4	0.73	25 15 39.1	1 56 47.70	0.109	10 3 16.9	0.74
26	1 56 46.78	0.111	10 3 10.6	0.75	26 15 35.1	1 56 45.01	0.114	10 2 58.8	0.77
27	1 56 44.05	0.116	10 2 52.3	0.78	27 15 31.1	1 56 42.22	0.118	10 2 40.1	0.79
28	1 56 41.21	0.120	10 2 33.3	0.80	28 15 27.1	1 56 39.32	0.123	10 2 20.8	0.81
29	1 56 38.26	0.125	10 2 13.8	0.82	29 15 23.1	1 56 36.31	0.128	10 2 1.0	0.84
30	1 56 35.20	0.130	10 1 53.7	0.85	30 15 19.2	1 56 33.19	0.132	10 1 40.6	0.86
31	1 56 32.03	-0.134	+10 1 33.1	- 0.87	31 15 15.2	1 56 29.97	-0.136	+10 1 19.7	- 0.88

NEPTUNE, 1874.

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	1 56 28.76	-0.138	+10 1 11.9	- 0.89	1 15 11.2	1 56 26.64	-0.141	+10 0 58.2	- 0.90
2	1 56 25.38	0.143	10 0 50.2	0.92	2 15 7.2	1 56 23.20	0.145	10 0 36.2	0.93
3	1 56 21.89	0.147	10 0 27.9	0.94	3 15 3.2	1 56 19.66	0.149	10 0 13.7	0.95
4	1 56 18.30	0.151	10 0 5.1	0.96	4 14 59.2	1 56 16.02	0.154	9 59 50.7	0.97
5	1 56 14.61	0.156	9 59 41.8	0.98	5 14 55.2	1 56 12.27	0.158	9 59 27.1	0.99
6	1 56 10.82	0.160	9 59 18.0	1.00	6 14 51.2	1 56 8.42	0.162	9 59 3.0	1.01
7	1 56 6.93	0.164	9 58 53.6	1.03	7 14 47.2	1 56 4.47	0.166	9 58 38.4	1.04
8	1 56 2.94	0.168	9 58 28.7	1.05	8 14 43.2	1 56 0.43	0.170	9 58 13.2	1.06
9	1 55 58.85	0.172	9 58 3.3	1.07	9 14 39.2	1 55 56.29	0.174	9 57 47.5	1.08
10	1 55 54.66	0.176	9 57 37.4	1.09	10 14 35.2	1 55 52.06	0.178	9 57 21.4	1.09
11	1 55 50.38	0.180	9 57 11.1	1.10	11 14 31.2	1 55 47.74	0.182	9 56 55.0	1.11
12	1 55 46.01	0.184	9 56 44.4	1.12	12 14 27.2	1 55 43.33	0.186	9 56 28.1	1.13
13	1 55 41.54	0.188	9 56 17.2	1.14	13 14 23.2	1 55 38.82	0.189	9 56 0.7	1.15
14	1 55 36.99	0.191	9 55 49.5	1.16	14 14 19.2	1 55 34.23	0.193	9 55 32.8	1.17
15	1 55 32.35	0.195	9 55 21.4	1.18	15 14 15.2	1 55 29.56	0.196	9 55 4.5	1.19
16	1 55 27.62	0.198	9 54 52.9	1.20	16 14 11.2	1 55 24.81	0.200	9 54 35.8	1.20
17	1 55 22.81	0.202	9 54 23.9	1.21	17 14 7.2	1 55 19.96	0.203	9 54 6.6	1.22
18	1 55 17.92	0.205	9 53 54.5	1.23	18 14 3.1	1 55 15.03	0.207	9 53 37.1	1.24
19	1 55 12.95	0.208	9 53 24.8	1.24	19 13 59.1	1 55 10.02	0.210	9 53 7.2	1.25
20	1 55 7.90	0.211	9 52 54.7	1.26	20 13 55.1	1 55 4.94	0.213	9 52 37.0	1.26
21	1 55 2.78	0.214	9 52 24.2	1.28	21 13 51.1	1 54 59.79	0.216	9 52 6.4	1.28
22	1 54 57.58	0.218	9 51 53.4	1.29	22 13 47.1	1 54 54.57	0.219	9 51 35.5	1.29
23	1 54 52.31	0.221	9 51 22.2	1.30	23 13 43.1	1 54 49.27	0.222	9 51 4.2	1.31
24	1 54 46.97	0.224	9 50 50.7	1.32	24 13 39.1	1 54 43.90	0.225	9 50 32.6	1.32
25	1 54 41.56	0.226	9 50 18.9	1.33	25 13 35.0	1 54 38.47	0.227	9 50 0.7	1.33
26	1 54 36.09	0.229	9 49 46.8	1.34	26 13 31.0	1 54 32.98	0.229	9 49 28.5	1.35
27	1 54 30.56	0.232	9 49 14.4	1.35	27 13 27.0	1 54 27.43	0.232	9 48 56.0	1.36
28	1 54 24.96	0.234	9 48 41.7	1.37	28 13 22.9	1 54 21.81	0.235	9 48 23.3	1.37
29	1 54 19.30	0.237	9 48 8.7	1.38	29 13 18.9	1 54 16.13	0.237	9 47 50.3	1.38
30	1 54 13.59	0.239	9 47 35.5	1.39	30 13 14.9	1 54 10.41	0.239	9 47 17.1	1.39
Oct. 1	1 54 7.82	0.241	9 47 2.0	1.40	1 13 10.9	1 54 4.63	0.241	9 46 43.6	1.40
2	1 54 2.00	0.243	9 46 28.3	1.41	2 13 6.8	1 53 58.80	0.244	9 46 9.9	1.41
3	1 53 56.12	0.245	9 45 54.4	1.42	3 13 2.8	1 53 52.91	0.246	9 45 35.9	1.42
4	1 53 50.20	0.247	9 45 20.2	1.43	4 12 58.8	1 53 46.98	0.248	9 45 1.6	1.43
5	1 53 44.23	0.249	9 44 45.8	1.44	5 12 54.7	1 53 41.00	0.250	9 44 27.2	1.43
6	1 53 38.21	0.251	9 44 11.2	1.44	6 12 50.7	1 53 34.98	0.252	9 43 52.7	1.44
7	1 53 32.15	0.253	9 43 36.5	1.45	7 12 46.7	1 53 28.91	0.254	9 43 18.0	1.45
8	1 53 26.05	0.255	9 43 1.6	1.45	8 12 42.6	1 53 22.80	0.255	9 42 43.1	1.45
9	1 53 19.91	0.256	9 42 26.6	1.46	9 12 38.6	1 53 16.66	0.256	9 42 8.1	1.46
10	1 53 13.74	0.257	9 41 51.4	1.47	10 12 34.6	1 53 10.49	0.258	9 41 33.0	1.46
11	1 53 7.54	0.259	9 41 16.1	1.47	11 12 30.5	1 53 4.29	0.259	9 40 57.7	1.47
12	1 53 1.30	0.260	9 40 40.6	1.48	12 12 26.5	1 52 58.06	0.260	9 40 22.3	1.47
13	1 52 55.04	0.261	9 40 5.1	1.48	13 12 22.5	1 52 51.81	0.261	9 39 46.8	1.48
14	1 52 48.76	0.262	9 39 29.5	1.48	14 12 18.4	1 52 45.53	0.262	9 39 11.3	1.48
15	1 52 42.45	0.263	9 38 53.9	1.48	15 12 14.4	1 52 39.23	0.262	9 38 35.8	1.48
16	1 52 36.12	0.263	9 38 18.2	1.49	16 12 10.4	1 52 32.91	0.263	9 38 0.2	1.48
17	1 52 29.78	0.264	9 37 42.5	1.49	17 12 6.3	1 52 26.57	0.264	9 37 24.5	1.49
18	1 52 23.42	0.265	9 37 6.7	1.49	18 12 2.3	1 52 20.22	0.264	9 36 48.8	1.49
19	1 52 17.05	0.265	9 36 31.0	1.49	19 11 58.3	1 52 13.87	0.264	9 36 13.1	1.48
20	1 52 10.67	0.265	9 35 55.3	1.49	20 11 54.2	1 52 7.51	0.265	9 35 37.5	1.48
21	1 52 4.29	0.266	9 35 19.6	1.48	21 11 50.2	1 52 1.14	0.265	9 35 2.0	1.48
22	1 51 57.90	0.266	9 34 44.0	1.48	22 11 46.1	1 51 54.76	0.265	9 34 26.5	1.48
23	1 51 51.51	0.266	9 34 8.4	1.48	23 11 42.1	1 51 48.39	0.265	9 33 51.0	1.47
24	1 51 45.12	0.266	9 33 32.9	1.48	24 11 38.1	1 51 42.02	0.265	9 33 15.6	1.47
25	1 51 38.74	0.265	9 32 57.4	1.47	25 11 34.0	1 51 35.66	0.265	9 32 40.3	1.46
26	1 51 32.36	0.265	9 32 22.1	1.47	26 11 30.0	1 51 29.30	0.265	9 32 5.1	1.46
27	1 51 25.98	0.265	9 31 46.9	1.46	27 11 25.9	1 51 22.94	0.264	9 31 30.1	1.45
28	1 51 19.61	0.264	9 31 11.8	1.46	28 11 21.9	1 51 16.60	0.264	9 30 55.2	1.45
29	1 51 13.26	0.264	9 30 36.8	1.45	29 11 17.8	1 51 10.27	0.263	9 30 20.3	1.45
30	1 51 6.93	0.263	9 30 1.9	1.45	30 11 13.8	1 51 3.97	0.262	9 29 45.6	1.44
31	1 51 0.62	0.262	9 29 27.2	1.44	31 11 9.8	1 50 57.69	0.261	9 29 11.1	1.43
32	1 50 54.32	-0.262	+ 9 28 52.7	- 1.43	32 11 5.7	1 50 51.42	-0.260	+ 9 28 36.8	- 1.42

Date. 1874.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	1 50 54.32	-0.262	+ 9 28 52.7	- 1.43	1 11 5.7	1 50 51.42	-0.260	+ 9 28 36.8	- 1.42
2	1 50 48.04	0.261	9 28 18.3	1.42	2 11 1.7	1 50 45.17	0.259	9 28 2.6	1.41
3	1 50 41.79	0.259	9 27 44.2	1.41	3 10 57.7	1 50 38.95	0.258	9 27 28.7	1.41
4	1 50 35.58	0.258	9 27 10.3	1.40	4 10 53.6	1 50 32.77	0.257	9 26 55.0	1.40
5	1 50 29.39	0.257	9 26 36.7	1.39	5 10 49.6	1 50 26.62	0.255	9 26 21.6	1.39
6	1 50 23.23	0.255	9 26 3.3	1.38	6 10 45.6	1 50 20.49	0.254	9 25 48.4	1.38
7	1 50 17.11	0.254	9 25 30.1	1.37	7 10 41.6	1 50 14.40	0.253	9 25 15.5	1.36
8	1 50 11.03	0.252	9 24 57.3	1.36	8 10 37.5	1 50 8.35	0.251	9 24 42.9	1.35
9	1 50 4.99	0.250	9 24 24.7	1.35	9 10 33.5	1 50 2.34	0.249	9 24 10.6	1.34
10	1 49 58.99	0.248	9 23 52.5	1.34	10 10 29.5	1 49 56.38	0.247	9 23 38.5	1.33
11	1 49 53.04	0.246	9 23 20.5	1.32	11 10 25.4	1 49 50.47	0.245	9 23 6.8	1.31
12	1 49 47.14	0.244	9 22 48.9	1.31	12 10 21.4	1 49 44.61	0.243	9 22 35.5	1.30
13	1 49 41.29	0.242	9 22 17.6	1.29	13 10 17.3	1 49 38.80	0.241	9 22 4.4	1.29
14	1 49 35.50	0.240	9 21 46.7	1.28	14 10 13.3	1 49 33.04	0.238	9 21 33.7	1.28
15	1 49 29.75	0.237	9 21 16.1	1.26	15 10 9.3	1 49 27.34	0.236	9 21 3.2	1.26
16	1 49 24.07	0.235	9 20 45.9	1.25	16 10 5.3	1 49 21.70	0.233	9 20 33.2	1.24
17	1 49 18.45	0.233	9 20 16.1	1.23	17 10 1.3	1 49 16.12	0.231	9 20 3.7	1.22
18	1 49 12.89	0.230	9 19 46.7	1.21	18 9 57.2	1 49 10.61	0.228	9 19 34.6	1.20
19	1 49 7.40	0.228	9 19 17.8	1.19	19 9 53.2	1 49 5.16	0.225	9 19 6.0	1.18
20	1 49 1.98	0.225	9 18 49.3	1.18	20 9 49.2	1 48 59.78	0.223	9 18 37.8	1.17
21	1 48 56.62	0.222	9 18 21.3	1.16	21 9 45.2	1 48 54.47	0.220	9 18 10.0	1.15
22	1 48 51.34	0.218	9 17 53.7	1.14	22 9 41.2	1 48 49.23	0.216	9 17 42.7	1.13
23	1 48 46.13	0.215	9 17 26.6	1.12	23 9 37.1	1 48 44.07	0.213	9 17 15.9	1.11
24	1 48 41.00	0.212	9 16 59.9	1.10	24 9 33.1	1 48 38.98	0.210	9 16 49.5	1.09
25	1 48 35.94	0.209	9 16 33.8	1.08	25 9 29.1	1 48 33.97	0.207	9 16 23.6	1.07
26	1 48 30.96	0.206	9 16 8.2	1.06	26 9 25.1	1 48 29.03	0.204	9 15 58.3	1.04
27	1 48 26.06	0.202	9 15 43.1	1.04	27 9 21.1	1 48 24.18	0.200	9 15 33.5	1.02
28	1 48 21.25	0.198	9 15 18.4	1.02	28 9 17.1	1 48 19.42	0.196	9 15 9.2	1.00
29	1 48 16.53	0.195	9 14 54.3	0.99	29 9 13.1	1 48 14.74	0.193	9 14 45.3	0.98
30	1 48 11.89	0.191	9 14 30.8	0.97	30 9 9.1	1 48 10.14	0.189	9 14 21.9	0.96
Dec. 1	1 48 7.33	0.188	9 14 7.7	0.95	1 9 5.1	1 48 5.63	0.186	9 13 59.1	0.94
2	1 48 2.87	0.184	9 13 45.2	0.92	2 9 1.1	1 48 1.22	0.182	9 13 36.9	0.91
3	1 47 58.51	0.180	9 13 23.3	0.90	3 8 57.1	1 47 56.91	0.178	9 13 15.4	0.88
4	1 47 54.24	0.176	9 13 2.1	0.87	4 8 53.1	1 47 52.69	0.174	9 12 54.4	0.86
5	1 47 50.07	0.172	9 12 41.4	0.85	5 8 49.1	1 47 48.56	0.170	9 12 34.0	0.84
6	1 47 45.99	0.168	9 12 21.3	0.82	6 8 45.1	1 47 44.53	0.166	9 12 14.1	0.81
7	1 47 42.01	0.163	9 12 1.8	0.80	7 8 41.1	1 47 40.60	0.161	9 11 54.9	0.79
8	1 47 38.14	0.159	9 11 42.9	0.77	8 8 37.1	1 47 36.78	0.157	9 11 36.3	0.76
9	1 47 34.38	0.154	9 11 24.7	0.74	9 8 33.1	1 47 33.07	0.152	9 11 18.3	0.73
10	1 47 30.72	0.150	9 11 7.1	0.72	10 8 29.1	1 47 29.45	0.148	9 11 1.0	0.71
11	1 47 27.16	0.146	9 10 50.2	0.69	11 8 25.1	1 47 25.94	0.144	9 10 44.4	0.68
12	1 47 23.71	0.141	9 10 33.9	0.66	12 8 21.1	1 47 22.54	0.139	9 10 28.4	0.65
13	1 47 20.38	0.136	9 10 18.3	0.64	13 8 17.1	1 47 19.25	0.134	9 10 13.0	0.63
14	1 47 17.16	0.132	9 10 3.3	0.61	14 8 13.1	1 47 16.08	0.130	9 9 58.3	0.60
15	1 47 14.05	0.127	9 9 49.0	0.58	15 8 9.1	1 47 13.02	0.125	9 9 44.3	0.57
16	1 47 11.05	0.122	9 9 35.3	0.56	16 8 5.2	1 47 10.07	0.120	9 9 30.9	0.54
17	1 47 8.17	0.118	9 9 22.3	0.53	17 8 1.2	1 47 7.23	0.116	9 9 18.2	0.51
18	1 47 5.40	0.113	9 9 10.0	0.50	18 7 57.2	1 47 4.51	0.111	9 9 6.2	0.48
19	1 47 2.75	0.108	9 8 58.5	0.47	19 7 53.2	1 47 1.91	0.106	9 8 54.9	0.45
20	1 47 0.23	0.102	9 8 47.7	0.44	20 7 49.3	1 46 59.43	0.101	9 8 44.4	0.42
21	1 46 57.83	0.097	9 8 37.6	0.41	21 7 45.3	1 46 57.07	0.095	9 8 34.5	0.40
22	1 46 55.54	0.092	9 8 28.2	0.38	22 7 41.3	1 46 54.84	0.090	9 8 25.4	0.37
23	1 46 53.38	0.087	9 8 19.5	0.35	23 7 37.4	1 46 52.72	0.085	9 8 17.0	0.34
24	1 46 51.34	0.082	9 8 11.5	0.32	24 7 33.4	1 46 50.72	0.080	9 8 9.2	0.31
25	1 46 49.42	0.077	9 8 4.2	0.29	25 7 29.4	1 46 48.85	0.075	9 8 2.2	0.28
26	1 46 47.63	0.072	9 7 57.7	0.26	26 7 25.5	1 46 47.10	0.070	9 7 55.9	0.25
27	1 46 45.96	0.067	9 7 51.9	0.23	27 7 21.5	1 46 45.48	0.065	9 7 50.3	0.22
28	1 46 44.42	0.061	9 7 46.8	0.20	28 7 17.6	1 46 43.98	0.060	9 7 45.4	0.19
29	1 46 43.01	0.056	9 7 42.4	0.17	29 7 13.6	1 46 42.61	0.054	9 7 41.3	0.16
30	1 46 41.72	0.051	9 7 38.8	0.14	30 7 9.6	1 46 41.36	0.049	9 7 37.9	0.13
31	1 46 40.55	0.046	9 7 35.9	0.10	31 7 5.7	1 46 40.24	0.044	9 7 35.2	0.10
32	1 46 39.51	-0.040	+ 9 7 33.8	- 0.07	32 7 1.7	1 46 39.24	-0.038	+ 9 7 33.2	- 0.07

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
	″	″	″	″	″	″	s	s	s
Jan. 1	7.09	5.35	4.85	2.67	5.18	2.77	0.19	0.38	0.19
6	6.76	5.32	4.78	2.55	5.14	2.73	0.19	0.38	0.19
11	6.53	5.29	4.71	2.46	5.11	2.69	0.18	0.38	0.18
16	6.37	5.26	4.64	2.41	5.08	2.65	0.18	0.37	0.18
21	6.28	5.24	4.57	2.37	5.06	2.61	0.17	0.37	0.18
26	6.25	5.22	4.50	2.36	5.04	2.57	0.17	0.36	0.17
31	6.28	5.20	4.44	2.37	5.02	2.53	0.17	0.36	0.17
Feb. 5	6.38	5.18	4.37	2.41	5.00	2.50	0.17	0.36	0.17
10	6.58	5.17	4.31	2.48	4.99	2.46	0.17	0.35	0.16
15	6.92	5.16	4.25	2.61	4.98	2.43	0.18	0.35	0.16
20	7.48	5.15	4.20	2.82	4.98	2.40	0.19	0.35	0.16
25	8.34	5.15	4.14	3.15	4.98	2.37	0.21	0.34	0.16
Mar. 2	9.58	5.15	4.09	3.62	4.98	2.34	0.24	0.34	0.16
7	11.19	5.16	4.04	4.23	4.99	2.31	0.28	0.34	0.16
12	12.93	5.16	3.99	4.88	4.99	2.28	0.33	0.34	0.15
17	14.27	5.17	3.94	5.39	5.00	2.25	0.36	0.34	0.15
22	14.71	5.19	3.90	5.55	5.01	2.23	0.37	0.34	0.15
27	14.26	5.21	3.86	5.38	5.03	2.20	0.36	0.34	0.15
April 1	13.28	5.23	3.82	5.02	5.05	2.18	0.34	0.35	0.15
6	12.18	5.26	3.78	4.60	5.08	2.16	0.31	0.35	0.15
11	11.13	5.29	3.74	4.20	5.11	2.14	0.28	0.35	0.15
16	10.19	5.32	3.70	3.85	5.14	2.12	0.26	0.36	0.15
21	9.37	5.36	3.67	3.54	5.18	2.10	0.24	0.37	0.15
26	8.68	5.41	3.64	3.28	5.22	2.08	0.22	0.37	0.15
May 1	8.08	5.46	3.61	3.05	5.27	2.06	0.20	0.38	0.15
6	7.57	5.51	3.58	2.86	5.32	2.04	0.19	0.39	0.15
11	7.17	5.57	3.55	2.71	5.38	2.03	0.18	0.40	0.15
16	6.87	5.64	3.53	2.59	5.45	2.01	0.18	0.40	0.15
21	6.71	5.72	3.50	2.53	5.52	2.00	0.18	0.41	0.15
26	6.72	5.80	3.48	2.54	5.60	1.99	0.18	0.42	0.14
31	6.91	5.89	3.46	2.61	5.69	1.98	0.19	0.42	0.14
June 5	7.27	5.99	3.44	2.75	5.79	1.97	0.20	0.43	0.14
10	7.80	6.10	3.43	2.94	5.89	1.96	0.22	0.44	0.14
15	8.45	6.22	3.41	3.19	6.00	1.95	0.23	0.44	0.14
20	9.24	6.34	3.40	3.49	6.12	1.94	0.25	0.45	0.14
25	10.15	6.47	3.39	3.83	6.26	1.94	0.27	0.45	0.14
30	11.17	6.62	3.38	4.22	6.40	1.93	0.30	0.46	0.14
July 5	12.29	6.78	3.38	4.64	6.55	1.93	0.32	0.47	0.14
10	13.45	6.95	3.37	5.08	6.71	1.92	0.35	0.47	0.14
15	14.47	7.14	3.36	5.46	6.90	1.92	0.38	0.48	0.14
20	15.10	7.35	3.36	5.70	7.10	1.92	0.39	0.49	0.14
25	15.02	7.57	3.36	5.67	7.31	1.92	0.39	0.50	0.14
30	14.16	7.80	3.37	5.35	7.54	1.92	0.37	0.51	0.14
Aug. 4	12.71	8.06	3.37	4.80	7.79	1.92	0.33	0.53	0.14
9	11.07	8.34	3.38	4.18	8.05	1.93	0.29	0.55	0.14
14	9.57	8.64	3.38	3.61	8.34	1.93	0.25	0.57	0.14
19	8.36	8.97	3.39	3.16	8.66	1.94	0.22	0.59	0.14
24	7.49	9.33	3.41	2.83	9.01	1.95	0.20	0.62	0.14
29	6.92	9.72	3.42	2.61	9.39	1.95	0.18	0.65	0.14
Sept. 3	6.59	10.15	3.44	2.49	9.81	1.96	0.17	0.68	0.14
8	6.41	10.62	3.46	2.42	10.26	1.98	0.16	0.72	0.14
13	6.35	11.13	3.48	2.40	10.76	1.99	0.16	0.76	0.14
18	6.37	11.71	3.50	2.40	11.31	2.00	0.16	0.81	0.14
23	6.45	12.35	3.53	2.44	11.93	2.02	0.16	0.86	0.14
28	6.60	13.06	3.56	2.49	12.62	2.03	0.17	0.92	0.14
Oct. 3	6.81	13.85	3.60	2.57	13.38	2,05	0.18	0.99	0.14
8	7.09	14.73	3.63	2.68	14.24	2.07	0.18	1.06	0.14
13	7.47	15.73	3.67	2.82	15.20	2.10	0.20	1.14	0.14
18	7.98	16.87	3.71	3.01	16.29	2.12	0.21	1.23	0.14
23	8.68	18.14	3.76	3.26	17.52	2.15	0.23	1.34	0.14

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
Oct. 28	9″.55	19″.59	3″.81	3″.60	18″.92	2″.18	0ˢ.26	1ˢ.45	0ˢ.15
Nov. 2	10.71	21.20	3.86	4.04	20.48	2.21	0.29	1.58	0.15
7	12.03	23.02	3.92	4.54	22.24	2.24	0.33	1.71	0.15
12	13.00	25.02	3.98	4.91	24.17	2.27	0.35	1.86	0.15
17	12.75	27.14	4.05	4.81	26.22	2.31	0.33	2.00	0.15
22	11.39	29.27	4.12	4.30	28.28	2.35	0.30	2.15	0.16
27	9.87	31.23	4.20	3.73	30.17	2.40	0.26	2.27	0.16
Dec. 2	8.69	32.69	4.28	3.28	31.58	2.44	0.23	2.36	0.16
7	7.84	33.43	4.39	2.96	32.29	2.49	0.21	2.38	0.17
12	7.25	33.22	4.46	2.74	32.09	2.55	0.19	2.33	0.17
17	6.84	32.18	4.56	2.58	31.09	2.61	0.18	2.24	0.18
22	6.56	30.41	4.67	2.47	29.42	2.67	0.18	2.10	0.18
27	6.36	28.41	4.79	2.40	27.45	2.73	0.17	1.95	0.19
32	6.24	26.24	4.91	2.36	25.35	2.80	0.17	1.80	0.19
Mean Noon.	♃	♄	♅	♃	♄	♅	♃	♄	♅
Jan. 1	1″.70	0″.81	0″.50	18″.17	7″.19	1″.90	1ˢ.29	0ˢ.55	0ˢ.13
11	1.76	0.81	0.50	18.73	7.16	1.91	1.33	0.54	0.13
21	1.82	0.81	0.51	19.29	7.14	1.91	1.37	0.54	0.13
31	1.87	0.81	0.51	19.82	7.14	1.91	1.41	0.54	0.13
Feb. 10	1.91	0.81	0.50	20.30	7.16	1.91	1.44	0.54	0.13
20	1.94	0.82	0.50	20.70	7.20	1.91	1.47	0.54	0.13
Mar. 2	1.97	0.82	0.50	20.98	7.25	1.90	1.49	0.55	0.13
12	1.99	0.83	0.50	21.13	7.32	1.89	1.50	0.55	0.13
22	1.99	0.84	0.49	21.13	7.41	1.87	1.50	0.56	0.13
April 1	1.98	0.85	0.49	21.00	7.50	1.86	1.49	0.56	0.13
11	1.95	0.86	0.49	20.74	7.61	1.84	1.47	0.57	0.13
21	1.92	0.88	0.48	20.36	7.73	1.83	1.45	0.58	0.13
May 1	1.87	0.89	0.48	19.90	7.86	1.81	1.42	0.59	0.13
11	1.82	0.91	0.47	19.38	8.00	1.79	1.38	0.60	0.13
21	1.77	0.92	0.47	18.83	8.13	1.78	1.34	0.61	0.12
31	1.72	0.94	0.47	18.28	8.26	1.76	1.30	0.62	0.12
June 10	1.67	0.95	0.46	17.75	8.39	1.75	1.26	0.63	0.12
20	1.62	0.96	0.46	17.24	8.51	1.74	1.23	0.64	0.12
30	1.58	0.97	0.46	16.77	8.61	1.73	1.19	0.64	0.12
July 10	1.54	0.98	0.45	16.34	8.69	1.73	1.16	0.65	0.12
20	1.50	0.99	0.45	15.96	8.74	1.72	1.13	0.66	0.12
30	1.47	0.99	0.45	15.61	8.77	1.72	1.11	0.66	0.12
Aug. 9	1.44	0.99	0.45	15.32	8.77	1.72	1.09	0.66	0.12
19	1.42	0.99	0.45	15.08	8.73	1.72	1.07	0.66	0.12
29	1.40	0.98	0.46	14.89	8.67	1.73	1.06	0.65	0.12
Sept. 8	1.39	0.97	0.46	14.74	8.59	1.74	1.05	0.65	0.12
18	1.38	0.96	0.46	14.64	8.49	1.75	1.04	0.64	0.12
28	1.37	0.95	0.46	14.59	8.37	1.76	1.04	0.63	0.12
Oct. 8	1.37	0.93	0.47	14.59	8.24	1.77	1.04	0.62	0.12
18	1.38	0.92	0.47	14.63	8.10	1.79	1.04	0.61	0.12
28	1.39	0.90	0.47	14.73	7.97	1.80	1.05	0.60	0.13
Nov. 7	1.40	0.89	0.48	14.87	7.84	1.82	1.06	0.59	0.13
17	1.42	0.87	0.48	15.07	7.71	1.84	1.08	0.58	0.13
27	1.44	0.86	0.49	15.32	7.59	1.85	1.10	0.57	0.13
Dec. 7	1.47	0.85	0.49	15.62	7.49	1.87	1.12	0.56	0.13
17	1.50	0.84	0.50	15.97	7.40	1.89	1.14	0.56	0.13
27	1.54	0.83	0.50	16.38	7.32	1.90	1.18	0.55	0.13
37	1.58	0.82	0.50	16.83	7.26	1.91	1.21	0.54	0.13

Horizontal Parallax of Neptune, 0″.30, Jan. 1 to Jan. 26; July 12 to Sept. 15; after Nov. 25.
" " " 0″.29, Jan. 27 to July 11.
" " " 0″.31, Sept. 16 to Nov. 25.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1874.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Jan.. 1.0	+.1909609	:0112	−.8847972	7999	−.3839360	9045	281° 11′ 56″.6	67″.4	+0″.48	9.99 26545
1.5	.1995303	5800	.8832055	2078	.3832451	2135	281 42 30.8	41.5	0.52	26550
2.0	.2080842	1334	.8815453	5473	.3825246	4929	282 13 5.0	15.6	0.56	26562
2.5	.2166219	6705	.8798170	8187	.3817745	7427	282 43 39.1	49.6	0.59	26581
3.0	.2251428	1909	.8780206	0220	.3809949	9630	283 14 13.2	23.6	0.62	26607
3.5	.2336464	6939	.8761561	1572	.3801857	1537	283 44 47.3	57.6	0.64	26630
4.0	.2421319	1789	.8742237	2245	.3793471	3150	284 15 21.5	31.7	0.65	26680
4.5	.2505987	6451	.8722235	2240	.3784791	4469	284 45 55.6	65.7	0.65	26727
5.0	.2590463	0922	.8701558	1560	.3775819	5496	285 16 29.7	39.7	0.65	26781
5.5	.2674740	5193	.8680206	0205	.3766554	6230	285 47 3.8	13.8	0.64	26842
6.0	.2758812	9260	.8658179	8176	.3756998	6674	286 17 37.8	47.7	0.63	26910
6.5	.2842672	3114	.8635480	5475	.3747150	6825	286 48 11.8	21.6	0.61	26985
7.0	.2926315	6752	.8612111	2103	.3737012	6687	287 18 45.8	55.5	0.58	27066
7.5	.3009734	:0166	.8588074	8064	.3726584	6258	287 49 19.8	29.4	0.55	27154
8.0	.3092922	3349	.8563370	3357	.3715868	5542	288 19 53.9	63.4	0.51	27249
8.5	.3175873	6294	.8538000	7985	.3704862	4535	288 50 27.9	37.3	0.46	27350
9.0	.3258582	8998	.8511967	1950	.3693569	3242	289 21 1.9	11.2	0.41	27457
9.5	.3341042	1452	.8485272	5253	.3681989	1662	289 51 35.9	45.1	0.36	27570
10.0	.3423246	3651	.8457915	7893	.3670121	:9794	290 22 10.0	19.1	0.30	27689
10.5	.3505188	5587	.8429899	9875	.3657968	7640	290 52 44.0	53.0	0.24	27812
11.0	.3586862	7256	.8401226	1200	.3645530	5202	291 23 18.0	27.0	0.17	27941
11.5	.3668260	8649	.8371898	1870	.3632807	2479	291 53 52.0	60.9	0.10	28076
12.0	.3749376	9760	.8341916	1886	.3619800	9472	292 24 25.9	34.7	+0.04	28215
12.5	.3830202	0580	.8311282	1250	.3606510	6182	292 54 59.7	68.4	−0.03	28358
13.0	.3910733	1106	.8279999	9965	.3592939	2611	293 25 33.5	42.1	0.10	28506
13.5	.3990963	1331	.8248069	8034	.3579087	8759	293 56 7.3	15.8	0.16	28660
14.0	.4070884	1247	.8215493	5456	.3564954	4626	294 26 41.1	49.5	0.22	28818
14.5	.4150489	0846	.8182275	2237	.3550543	0215	294 57 14.7	23.0	0.28	28980
15.0	.4229772	:0124	.8148417	8377	.3535855	5527	295 27 48.2	56.0	0.33	29146
15.5	.4308728	9075	.8113923	3882	.3520890	0562	295 58 21.6	29.7	0.38	29317
16.0	.4387348	7690	.8078794	8751	.3505648	5320	296 28 54.9	63.0	0.42	29492
16.5	.4465626	5962	.8043034	2990	.3490133	:9805	296 59 28.1	36.1	0.45	29670
17.0	.4543556	3887	.8006646	6600	.3474345	4018	297 30 1.1	9.0	0.47	29853
17.5	.4621132	1458	.7969633	9586	.3458286	7959	298 0 34.0	41.8	0.48	30040
18.0	.4698347	8668	.7931998	1949	.3441956	1630	298 31 6.8	14.5	0.49	30231
18.5	.4775194	5509	.7893744	3694	.3425358	5032	299 1 39.3	46.9	0.49	30425
19.0	.4851668	1978	.7854876	4825	.3408493	8168	299 32 11.6	19.1	0.48	30623
19.5	.4927762	8067	.7815396	5344	.3391361	1036	300 2 43.8	51.2	0.47	30825
20.0	.5003469	3769	.7775307	5254	.3373964	3640	300 33 15.8	23.1	0.45	31031
20.5	.5078784	9079	.7734614	4560	.3356305	5981	301 3 47.5	54.7	0.42	31241
21.0	.5153702	3992	.7693321	3266	.3338385	8062	301 34 19.0	26.2	0.38	31455
21.5	.5228216	8501	.7651430	1375	.3320205	:9883	302 4 50.2	57.3	0.34	31673
22.0	.5302319	2599	.7608944	8888	.3301767	1446	302 35 21.2	28.2	0.29	31895
22.5	.5376008	6283	.7565869	5812	.3283073	2753	303 5 51.9	58.8	0.24	32122
23.0	.5449277	9547	.7522209	2151	.3264124	3805	303 36 22.4	29.2	0.19	32354
23.5	.5522120	2385	.7477967	7909	.3244922	4604	304 6 52.6	59.3	0.13	32590
24.0	.5594531	4791	.7433146	3087	.3225471	5154	304 37 22.5	29.1	−0.07	32831
24.5	.5666505	6760	.7387751	7692	.3205770	5454	305 7 52.1	58.7	0.00	33077
25.0	.5738036	8286	.7341785	1725	.3185821	5506	305 38 21.5	28.0	+0.06	33328
25.5	.5809119	9364	.7295253	5193	.3165626	5312	306 8 50.5	56.9	0.12	33584
26.0	.5879749	9990	.7248158	8097	.3145188	4876	306 39 19.2	25.5	0.19	33845
26.5	.5949921	:0157	.7200505	0444	.3124508	4196	307 9 47.6	53.8	0.25	34112
27.0	.6019630	9862	.7152298	2236	.3103588	3278	307 40 15.7	21.8	0.31	34385
27.5	.6088871	9098	.7103540	3478	.3082429	2120	308 10 43.4	49.4	0.37	34663
28.0	.6157639	7862	.7054236	4174	.3061032	0725	308 41 10.8	16.7	0.43	34947
28.5	.6225930	6148	.7004390	4328	.3039401	9095	309 11 38.0	43.9	0.48	35238
29.0	.6293739	3953	.6954006	3944	.3017535	7231	309 42 4.9	10.7	0.53	35534
29.5	.6361061	1270	.6903088	3026	.2995438	5135	310 12 31.4	37.2	0.57	35836
30.0	.6427891	8096	.6851639	1577	.2973110	2809	310 42 57.6	63.3	0.60	36144
30.5	.6494226	4426	.6799664	9602	.2950555	0255	311 13 23.6	29.2	0.63	36459
31.0	.6560062	0258	.6747166	7104	.2927773	7475	311 43 49.3	54.8	0.65	36780
31.5	+.6625393	5585	−.6694150	4088	−.2904766	4470	312 14 14.7	20.1	+0.66	37107

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date. 1874.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
										9.99
Feb. 1.0	+.6690214	0402	−.6640619	0557	−.2881539	1245	312° 44′ 39″.8	45″.1	+0″.66	37440
1.5	.6754521	4705	.6586578	6516	.2858090	7797	313 15 4.6	9.8	0.65	37779
2.0	.6818310	8490	.6532031	1969	.2834421	4130	313 45 29.1	34.2	0.64	38124
2.5	.6881576	1752	.6476981	6919	.2810534	0245	314 15 53.4	58.5	0.62	38476
3.0	.6944314	4486	.6421432	1371	.2786432	6145	314 46 17.4	22.4	0.59	38834
3.5	.7006519	6687	.6365388	5327	.2762116	1831	315 16 41.1	46.1	0.55	39198
4.0	.7068188	8352	.6308855	8794	.2737587	7304	315 47 4.5	9.4	0.51	39568
4.5	.7129316	9476	.6251836	1775	.2712847	2566	316 17 27.7	32.5	0.47	39944
5.0	.7189898	:0054	.6194335	4275	.2687898	7619	316 47 50.6	55.3	0.42	40325
5.5	.7249930	:0082	.6136356	6296	.2662743	2466	317 18 13.3	17.9	0.36	40711
6.0	.7309408	9556	.6077903	7842	.2637382	7107	317 48 35.7	40.2	0.30	41103
6.5	.7368327	8471	.6018980	8921	.2611817	1544	318 18 57.9	62.4	0.24	41501
7.0	.7426682	6823	.5959592	9534	.2586049	5779	318 49 19.9	24.3	0.18	41903
7.5	.7484469	4606	.5899743	9685	.2560082	:9814	319 19 41.6	46.0	0.11	42309
8.0	.7541683	1816	.5839437	9380	.2533918	3652	319 50 3.0	7.3	+0.04	42720
8.5	.7598317	8447	.5778679	8622	.2507558	7295	320 20 24.1	28.4	−0.03	43136
9.0	.7654370	4497	.5717473	7417	.2481003	0742	320 50 44.9	49.1	0.09	43557
9.5	.7709837	9960	.5655825	5769	.2454255	3996	321 21 5.5	9.6	0.15	43982
10.0	.7764713	4833	.5593739	3684	.2427318	7062	321 51 25.8	29.8	0.21	44410
10.5	.7818993	9109	.5531219	1165	.2400193	:9939	322 21 45.8	49.7	0.27	44843
11.0	.7872672	2785	.5468271	8218	.2372880	2629	322 52 5.6	9.4	0.32	45279
11.5	.7925746	5855	.5404899	4846	.2345384	5135	323 22 25.0	28.8	0.36	45718
12.0	.7978212	8318	.5341109	1057	.2317706	7460	323 52 44.1	47.8	0.40	46160
12.5	8030064	0167	.5276905	6854	.2289847	9604	324 23 3.0	6.7	0.43	46605
13.0	.8081299	1399	.5212292	2242	.2261809	1568	324 53 21.6	25.2	0.46	47053
13.5	.8131912	2009	.5147276	7226	.2233597	3358	225 23 39.8	43.4	0.48	47503
14.0	.8181900	1994	.5081863	1814	.2205213	4977	325 53 57.7	61.2	0.50	47956
14.5	.8231259	1350	.5016056	6008	.2176658	6425	326 24 15.2	18.6	0.50	48412
15.0	.8279984	:0072	.4949862	9815	.2147934	7704	326 54 32.3	35.6	0.50	48870
15.5	.8328072	8157	.4883286	3239	.2119045	8818	327 24 49.0	52.2	0.48	49330
16.0	.8375519	5601	.4816333	6287	.2089992	9768	327 55 5.4	8.5	0.46	49793
16.5	.8422321	2400	.4749010	8965	.2060778	0557	328 25 21.4	24.5	0.44	50259
17.0	.8468474	8551	.4681322	1278	.2031405	1187	328 55 37.1	40.1	0.41	50727
17.5	.8513974	4048	.4613275	3231	.2001876	1661	329 25 52.3	55.3	0.37	51196
18.0	.8558819	8891	.4544875	4832	.1972193	1981	329 56 7.1	10.0	0.33	51668
18.5	.8603005	3074	.4476126	6084	.1942358	2149	330 26 21.4	24.3	0.28	52142
19.0	.8646529	6596	.4407034	6993	.1912374	2168	330 56 35.3	38.1	0.23	52617
19.5	.8689388	9452	.4337607	7566	.1882245	2042	331 26 48.7	51.4	0.17	53096
20.0	.8731578	1640	.4267850	7810	.1851972	1772	331 57 1.7	4.3	0.11	53577
20.5	.8773097	3156	.4197770	7731	.1821558	1361	332 27 14.2	16.8	−0.05	54060
21.0	.8813942	3999	.4127371	7333	.1791006	0813	332 57 26.2	28.7	+0.02	54545
21.5	.8854112	4166	.4056659	6620	.1760318	0128	333 27 37.7	40.2	0.09	55032
22.0	.8893604	3656	.3985640	5604	.1729497	9310	333 57 48.8	51.2	0.16	55521
22.5	.8932415	2465	.3914319	4284	.1698545	8361	334 27 59.3	61.7	0.23	56022
23.0	.8970542	0590	.3842703	2669	.1667465	7285	334 58 9.3	11.6	0.29	56517
23.5	.9007984	8030	.3770797	0764	.1636260	6083	335 28 18.8	21.1	0.35	57015
24.0	.9044738	4782	.3698608	8576	.1604932	4758	335 58 27.8	30.0	0.41	57518
24.5	.9080802	0844	.3626140	6109	.1573483	3312	336 28 36.4	38.5	0.46	58025
25.0	.9116173	6213	.3553398	3368	.1541915	1748	336 58 44.5	46.8	0.50	58535
25.5	.9150850	0888	.3480390	0361	.1510233	0069	337 28 52.0	54.0	0.54	59049
26.0	.9184831	4867	.3407121	7093	.1478438	8278	337 58 59.0	60.9	0.57	59567
26.5	.9218113	8147	.3333596	3569	.1446532	6375	338 29 5.6	7.5	0.60	60088
27.0	.9250695	0727	.3259821	9795	.1414518	4365	338 59 11.7	13.5	0.62	60613
27.5	.9282575	2605	.3185802	5777	.1382398	2248	339 29 17.2	19.0	0.63	61143
28.0	.9313752	3781	.3111543	1519	.1350175	0029	339 59 22.2	23.9	0.64	61676
28.5	.9344225	4252	.3037050	7027	.1317851	7708	340 29 26.8	28.5	0.64	62213
Mar. 1.0	.9373991	4017	.2962329	2307	.1285428	5289	340 59 30.9	32.5	0.63	62754
1.5	.9403048	3072	.2887386	7365	.1252908	2772	341 29 34.5	36.0	0.61	63289
2.0	.9431395	1418	.2812226	2206	.1220294	0162	341 59 37.7	39.1	0.58	63848
2.5	.9459031	9052	.2736854	6835	.1187589	7460	342 29 40.4	41.8	0.55	64401
3.0	.9485954	5974	.2661275	1257	.1154794	4670	342 59 42.6	43.9	0.51	64959
3.5	+.9512162	2180	−.2585495	5478	−.1121913	1792	343 29 44.3	45.6	+0.46	65520

NOTE.— : denotes a change in thepreceding figure.

Date. 1874.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Mar. 4.0	+.9537654	7671	−.2509521	9505	−.1088947	8830	343° 59′ 45″.6	46″.8	+0″.41	9.99 66085
4.5	.9562427	2443	.2433357	3342	.1055899	5785	344 29 46.4	47.6	0.36	66655
5.0	.9586480	6495	.2357007	6994	.1022771	2662	344 59 46.8	47.9	0.30	67229
5.5	.9609812	9826	.2280478	0466	.0989566	9460	345 29 46.8	47.9	0.24	67805
6.0	.9632421	2434	.2203776	3765	.0956285	6183	345 59 46.3	47.3	0.17	68385
6.5	.9654306	4318	.2126905	6895	.0922932	2833	346 29 45.4	46.4	0.10	68969
7.0	.9675464	5475	.2049871	9862	.0889508	9414	346 59 44.1	45.0	+0.04	69557
7.5	.9695895	5905	.1972679	2671	.0856016	5925	347 29 42.4	43.3	−0.02	70148
8.0	.9715596	5605	.1895336	5329	.0822458	2371	347 59 40.2	41.0	0.09	70741
8.5	.9734566	4574	.1817847	7841	.0788837	8753	348 29 37.6	38.4	0.15	71336
9.0	.9752802	2809	.1740217	0213	.0755154	5075	348 59 34.6	35.3	0.21	71933
9.5	.9770305	0311	.1662453	2450	.0721413	1337	349 29 31.2	31.9	0.27	72533
10.0	.9787073	7078	.1584560	4558	.0687616	7544	349 59 27.4	28.0	0.32	73135
10.5	.9803104	3108	.1506544	6543	.0653765	3697	350 29 23.2	23.8	0.37	73739
11.0	.9818396	8400	.1428410	8411	.0619862	9798	350 59 18.5	19.0	0.42	74345
11.5	.9832949	2952	.1350166	0168	.0585911	5851	351 29 13.4	13.9	0.45	74952
12.0	.9846762	6764	.1271816	1819	.0551914	1858	351 59 7.9	8.3	0.49	75560
12.5	.9859833	9835	.1193367	3371	.0517873	7821	352 29 2.0	2.4	0.51	76170
13.0	.9872160	2162	.1114825	4830	.0483791	3743	352 58 55.7	56.0	0.53	76781
13.5	.9883743	3745	.1036196	6202	.0449676	9626	353 28 49.0	49.3	0.53	77392
14.0	.9894581	4582	.0957486	7493	.0415514	5474	353 58 41.8	42.0	0.53	78003
14.5	.9904672	4673	.0878701	8709	.0381325	1289	354 28 34.2	34.4	0.52	78615
15.0	.9914016	4017	.0799847	9856	.0347107	7075	354 58 26.1	26.2	0.51	79227
15.5	.9922613	2614	.0720932	0942	.0312862	2834	355 28 17.5	17.6	0.49	79839
16.0	.9930462	0463	.0641961	1972	.0278593	8569	355 58 8.4	8.4	0.46	80451
16.5	.9937563	7564	.0562941	2953	.0244342	4282	356 27 58.9	58.9	0.42	81063
17.0	.9943914	3914	.0483878	3891	.0209992	9976	356 57 48.9	48.8	0.38	81675
17.5	.9949517	9517	.0404779	4793	.0175666	5654	357 27 38.3	38.2	0.34	82286
18.0	.9954371	4371	.0325650	5665	.0141327	1319	357 57 27.2	27.0	0.29	82897
18.5	.9958475	8475	.0246499	6515	.0106978	6974	358 27 15.6	15.4	0.23	83508
19.0	.9961829	1829	.0167331	7349	.0072621	2621	358 57 3.5	3.2	0.17	84119
19.5	.9964435	4435	.0088151	8170	.0038258	8262	359 26 50.9	50.6	0.11	84729
20.0	.9966292	6293	−.0008965	8985	−.0003893	3901	359 56 37.7	37.3	−0.04	85339
20.5	.9967401	7402	+.0070220	0199	+.0030472	0460	0 26 24.0	23.5	+0.02	85948
21.0	.9967763	7764	.0149398	9376	.0064834	4817	0 56 9.8	9.2	0.09	86557
21.5	.9967378	7379	.0228562	8539	.0099190	9169	1 25 55.1	54.5	0.16	87165
22.0	.9966246	6248	.0307707	7683	.0133538	3513	1 55 39.8	39.1	0.22	87773
22.5	.9964368	4370	.0386827	6802	.0167875	7846	2 25 23.9	23.2	0.28	88381
23.0	.9961744	1747	.0465915	5889	.0202197	2164	2 55 7.4	6.6	0.34	88990
23.5	.9958377	8380	.0544963	4936	.0236502	6465	3 24 50.2	49.4	0.39	89599
24 0	.9954267	4271	.0623967	3939	.0270788	0747	3 54 32.5	31.6	0.44	90208
24.5	.9949415	9419	.0702922	2893	.0305052	5007	4 24 14.3	13.4	0.48	90817
25.0	.9943821	3826	.0781821	1791	.0339290	9241	4 53 55.5	54.5	0.52	91426
25.5	.9937489	7494	.0860657	0626	.0373500	3447	5 23 36.1	35.1	0.55	92036
26.0	.9930418	0424	.0939425	9393	.0407681	7624	5 53 16.1	15.0	0.57	92647
26.5	.9922610	2617	.1028119	8087	.0441830	1769	6 22 55.5	54.4	0.59	93258
27.0	.9914068	4076	.1096734	6699	.0475944	5879	6 52 34.3	33.1	0.60	93870
27.5	.9904792	4800	.1175265	5229	.0510020	9951	7 22 12.5	11.3	0.60	94484
28.0	.9894782	4791	.1253706	3669	.0544058	3985	7 51 50.2	48.9	0.59	95098
28.5	.9884041	4051	.1332051	2013	.0578054	7977	8 21 27.3	26.0	0.58	95713
29.0	.9872570	2581	.1410295	0256	.0612006	1925	8 51 3.8	2.4	0.56	96329
29.5	.9860371	0383	.1488433	8393	.0645911	5826	9 20 39.8	38.4	0.53	96947
30.0	.9847444	7457	.1566460	6419	.0679768	9679	9 50 15.2	13.7	0.49	97567
30.5	.9833791	3805	1644371	4329	.0713574	3481	10 19 50.1	48.6	0.45	98188
31.0	.9819413	9428	.1722159	2116	.0747328	7231	10 49 24.5	22.9	0.40	98810
31.5	.9804313	4329	.1799820	9776	.0781025	0924	11 18 58.4	56.8	0.34	99433
Apr. 1.0	.9788491	8508	.1877349	7304	.0814665	4561	11 48 31.7	30.0	0.28	◆00058
1.5	.9771949	1967	.1954740	4694	.0848244	8136	12 18 4.5	2.8	0.22	00684
2.0	9754688	4708	.2031988	1941	.0881761	1649	12 47 36.8	35.0	0.16	01312
2.5	.9736710	6731	.2109088	9040	.0915214	5098	13 17 8.7	6.9	0.09	01940
3.0	.9718016	8039	.2186034	5985	.0948601	8481	13 46 40.1	38.4	+0.02	02569
3.5	+.9698608	8632	+.2262819	2769	+.0981917	1793	14 16 10.9	9.0	−0.05	03200

◆ The first figures of this and the following logarithms are 0.00.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1874.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Apr. 4.0	+.9678487	8513	+.2339438	9387	+.1015161	5033	14° 45′ 41″.2	39″.2	−0″.11	0.00 03832
4.5	.9657655	7682	.2415888	5836	.1048332	8200	15 15 11.1	9.0	0.18	04464
5.0	.9636112	6141	.2492165	2112	.1081428	1292	15 44 40.5	38.3	0.24	05097
5.5	.9613861	3892	.2568261	8207	.1114445	4305	16 14 9.5	7.3	0.30	05730
6.0	.9590904	0937	.2644170	4115	.1147382	7239	16 43 38.1	35.8	0.35	06364
6.5	.9567241	7275	.2719888	9832	.1180234	0087	17 13 6.2	3.9	0.40	06998
7.0	.9542874	2910	.2795409	5352	.1213002	2851	17 42 33.8	31.4	0.44	07632
7.5	.9517805	7843	.2870728	0670	.1245685	5530	18 11 61.0	58.6	0.48	08266
8.0	.9492036	2076	.2945840	5781	.1278278	8119	18 41 27.8	25.3	0.52	08900
8.5	.9465569	5611	.3020738	0678	.1310777	0615	19 10 54.2	51.7	0.55	09533
9.0	.9438404	8448	.3095418	5357	.1343182	3015	19 40 20.1	17.5	0.57	10164
9.5	.9410543	0589	.3169874	9812	.1375490	5319	20 9 45.6	42.9	0.58	10795
10.0	.9381989	2037	.3244101	4038	.1407700	7526	20 39 10.6	7.8	0.59	11425
10.5	.6352744	2794	.3318092	8028	.1439807	9629	21 8 35.2	32.4	0.58	12052
11.0	.9322809	2861	.3391843	1778	.1471811	1629	21 37 59.4	56.5	0.57	12678
11.5	.9292187	2241	.3465348	5282	.1503708	3522	22 7 23.2	20.3	0.55	13302
12.0	.9260880	0937	.3538600	8533	.1535496	5307	22 36 46.6	43.6	0.53	13924
12.5	.9228890	8949	.3611593	1525	.1567172	6979	23 6 9.5	6.5	0.50	14544
13.0	.9196221	6282	.3684323	4254	.1598735	8539	23 35 31.9	28.8	0.46	15161
13.5	.9162875	2938	.3756784	6714	.1630182	:9982	24 4 53.9	50.8	0.41	15776
14.0	.9128855	8921	.3828970	8899	.1661508	1305	24 34 15.5	12.3	0.36	16389
14.5	.9094163	4231	.3900876	0804	.1692713	2506	25 3 36.5	33.2	0.31	16999
15.0	.9058803	8874	.3972496	2424	.1723795	3585	25 32 57.1	53.7	0.25	17606
15.5	.9022777	2850	.4043824	3751	.1754751	4538	26 2 17.2	13.8	0.19	18211
16.0	.8986088	6164	.4114854	4780	.1785576	5360	26 31 36.8	33.3	0.13	18812
16.5	.8948739	8817	.4185581	5506	.1816271	6051	27 0 55.9	52.4	0.07	19410
17.0	.8910734	0815	.4256002	5927	.1846833	6610	27 30 14.5	10.9	−0.01	20005
17.5	.8872075	2159	.4326110	6034	.1877258	7032	27 59 32.6	29.0	+0.05	20597
18.0	.8832766	2853	.4395899	5822	.1907544	7315	28 28 50.2	46.5	0.12	21186
18.5	.8792811	2901	.4465365	5287	.1937691	7458	28 58 7.4	3.7	0.18	21772
19.0	.8752213	2306	.4534502	4424	.1967695	7459	29 27 24.0	20.2	0.25	22355
19.5	.8710976	1072	.4603306	3227	.1997554	7315	29 56 40.1	36.2	0.31	22934
20.0	.8669103	9202	.4671771	1692	.2027265	7023	30 25 55.7	51.7	0.36	23511
20.5	.8626598	6698	.4739892	9812	.2056827	6581	30 55 10.7	6.7	0.40	24085
21.0	.8583465	3570	.4807665	7585	.2086238	5989	31 24 25.2	21.1	0.44	24656
21.5	.8539708	9816	.4875085	5004	.2115406	5244	31 53 39.2	35.1	0.47	25224
22.0	.8495330	5442	.4942147	2066	.2144597	4342	32 22 52.6	48.4	0.50	25789
22.5	.8450336	0451	.5008845	8763	.2173541	3283	32 52 5.5	1.3	0.52	26353
23.0	.8404730	4849	.5075177	5094	.2202326	2065	33 21 17.9	13.6	0.53	26915
23.5	.8358516	8638	.5141138	1054	.2230950	0686	33 50 29.7	25.3	0.53	27474
24.0	.8311697	1823	.5206723	6639	.2259408	9141	34 19 40.9	36.4	0.53	28030
24.5	.8264278	4407	.5271927	1842	.2287702	7432	34 48 51.7	47.1	0.52	28585
25.0	.8216262	6395	.5336747	6662	.2315829	5556	35 17 62.0	57.3	0.50	29138
25.5	.8167654	7790	.5401178	1092	.2343786	3510	35 47 11.7	7.0	0.47	29689
26.0	.8118457	8597	.5465215	5129	.2371572	1293	36 16 20.9	16.1	0.44	30239
26.5	.8068676	8819	.5528855	8768	.2399185	8903	36 45 29.6	24.8	0.40	30788
27.0	.8018315	8462	.5592094	2007	.2426624	6339	37 14 37.8	32.9	0.35	31335
27.5	.7967377	7528	.5654929	4841	.2453887	3599	37 43 45.5	40.6	0.30	31880
28.0	.7915866	6021	.5717355	7267	.2480971	0681	38 12 52.7	47.7	0.24	32423
28.5	.7863787	3945	.5779367	9278	.2507876	7583	38 41 59.4	54.3	0.18	32996
29.0	.7811144	1306	.5840962	0873	.2534600	4305	39 11 5.7	0.5	0.12	33508
29.5	.7757940	8106	.5902137	2047	.2561143	0845	39 40 11.5	6.2	+0.06	34048
30.0	.7704178	4348	.5962887	2797	.2587501	7201	40 9 16.8	11.4	−0.01	34587
30.5	.7649863	:0037	.6023209	3118	.2613672	3369	40 38 21.7	16.3	0.08	35126
May 1.0	.7595000	5178	.6083098	3007	.2639656	9351	41 7 26.1	20.6	0.15	35664
1.5	.7539592	9774	.6142550	2459	.2665451	5143	41 36 30.1	24.6	0.22	36200
2.0	.7483642	3828	.6201561	1470	.2691055	0745	42 5 33.8	28.2	0.27	36734
2.5	.7427154	7344	.6260129	0038	.2716466	6153	42 34 37.0	31.4	0.33	37267
3.0	.7370133	0327	.6318249	8158	.2741683	1368	43 3 39.8	34.1	0.38	37799
3.5	.7312582	2780	.6375917	5826	.2766705	6388	43 32 42.2	36.4	0.43	38330
4.0	.7254505	4708	.6433130	3039	.2791528	1209	44 1 44.3	38.4	0.48	38859
4.5	+.7195905	6112	+.6489883	9792	+.2816152	5830	44 30 46.1	40.1	−0.53	39385

NOTE.—: denotes a change in the preceding figure.

SUN'S COÖRDINATES, 1874.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1874.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
May 5.0	+.7136787	6999	+.6546173	6082	+.2840575	0251	44° 59′ 47″.4	41″.3	−0″.57	0.00 39910
5.5	.7077155	7371	.6601995	1904	.2864796	4470	45 28 48.3	42.2	0.60	40433
6.0	.7017013	7234	.6657344	7254	.2888814	8486	45 57 48.9	42.7	0.62	40954
6.5	.6956365	6590	.6712217	2127	.2912624	2294	46 26 49.3	43.1	0.62	41471
7.0	.6895214	5444	.6766612	6522	.2936226	5894	46 55 49.3	43.0	0.64	41986
7.5	.6833565	3799	.6820523	0433	.2959620	9286	47 24 48.9	42.5	0.64	42499
8.0	.6771423	1662	.6873946	3857	.2982803	2467	47 53 48.2	41.7	0.64	43009
8.5	.6708792	9035	.6926878	6789	.3005772	5434	48 22 47.1	40.5	0.62	43515
9.0	.6645676	5924	.6979315	9226	.3028527	8187	48 51 45.7	39.0	0.60	44018
9.5	.6582080	2333	.7031253	1165	.3051066	0724	49 20 44.0	37.2	0.57	44518
10.0	.6518008	8266	.7082687	2599	.3073386	3043	49 49 42.0	35.1	0.54	45013
10.5	.6453464	3726	.7133615	3527	.3095486	5141	50 18 39.7	32.8	0.50	45504
11.0	.6388454	8722	.7184032	3945	.3117365	7018	50 47 37.0	29.9	0.45	45991
11.5	.6322982	3254	.7233934	3847	.3139022	8672	51 16 34.0	27.0	0.40	46474
12.0	.6257053	7330	.7283318	3232	.3160455	0105	51 45 30.7	23.6	0.34	46953
12.5	.6190672	0954	.7332180	2094	.3181660	1308	52 14 27.1	19.9	0.28	47427
13.0	.6123843	4130	.7380516	0431	.3202637	2284	52 43 23.2	15.9	0.21	47897
13.5	.6056572	6864	.7428322	8238	.3223386	3031	53 12 19.0	11.6	0.14	48363
14.0	.5988864	9161	.7475594	5511	.3243903	3547	53 41 14.5	7.0	−0.07	48823
14.5	.5920725	1027	.7522329	2246	.3264187	3829	54 10 9.5	1.9	0.00	49278
15.0	.5852159	2466	.7568524	8442	.3284236	3877	54 38 64.2	56.5	+0.07	49728
15.5	.5783172	3484	.7614175	4094	.3304049	3688	55 7 58.6	50.9	0.13	50173
16.0	.5713769	4087	.7659278	9198	.3323624	3262	55 36 52.6	44.8	0.19	50613
16.5	.5643955	4278	.7703831	3752	.3342960	2597	56 5 46.2	38.4	0.25	51047
17.0	.5573737	4065	.7747831	7753	.3362056	1692	56 34 39.5	31.6	0.31	51476
17.5	.5503120	3453	.7791273	1196	.3380909	0544	57 3 32.4	24.4	0.36	51899
18.0	.5432110	2449	.7834153	4077	.3399517	9151	57 32 24.9	16.8	0.39	52317
18.5	.5360712	1056	.7876471	6396	.3417882	7515	58 1 17.0	8.8	0.42	52739
19.0	.5288933	9283	.7918224	8150	.3436002	5634	58 30 8.8	0.5	0.45	53138
19.5	.5216778	7133	.7959409	9336	.3453874	3505	58 58 60.2	51.8	0.47	53541
20.0	.5144251	4612	.8000023	;9951	.3471497	1127	59 27 51.2	42.7	0.49	53939
20.5	.5071360	1726	.8040063	;9992	.3488872	8501	59 56 41.9	33.4	0.50	54333
21.0	.4998110	8482	.8079528	9459	.3505997	5625	60 25 32.2	23.6	0.50	54722
21.5	.4924506	4883	.8118415	8347	.3522870	2497	60 54 22.1	13.4	0.49	55106
22.0	.4850555	0938	.8156721	6655	.3539491	9118	61 23 11.6	2.8	0.47	55485
22.5	.4776261	6649	.8194445	4380	.3555859	5485	61 51 60.7	51.8	0.44	55860
23.0	.4701631	2025	.8231584	1521	.3571973	1599	62 20 49.5	40.5	0.41	56231
23.5	.4626670	7069	8268136	8075	.3587832	7457	62 49 37.8	28.7	0.38	56598
24.0	.4551382	1787	.8304098	4039	.3603435	3060	63 18 25.7	16.5	0.34	56961
24.5	.4475775	6185	.8339468	9411	.3618781	8405	63 47 13.3	4.0	0.29	57321
25.0	.4399854	;0270	.8374246	4190	.3633869	3493	64 15 60.6	51.2	0.24	57677
25.5	.4323624	4045	.8408429	8375	.3648699	8322	64 44 47.5	38.1	0.18	58029
26.0	.4247091	7518	.8442014	1962	.3663269	2892	65 13 34.0	24.5	0.12	58378
26.5	.4170260	0692	.8475000	4950	.3677578	7200	65 42 20.2	10.6	+0.06	58724
27.0	.4093136	3574	.8507386	7338	.3691627	1249	66 10 66.0	56.3	−0.01	59066
27.5	.4015725	6169	.8539170	9124	.3705415	5037	66 39 51.6	41.8	0.08	59406
28.0	.3938032	8482	.8570348	0305	.3718941	8563	67 8 36.9	27.0	0.15	59743
28.5	.3860063	0518	.8600920	0879	.3732203	1825	67 37 21.9	11.9	0.22	60077
29.0	.3781822	2283	.8630885	0846	.3745202	4824	68 5 66.5	56.4	0.28	60408
29.5	.3703316	3783	.8660241	0204	.3757937	7559	68 34 50.9	40.7	0.34	60736
30.0	.3624549	5022	.8688986	8952	.3770407	0029	69 3 35.0	24.7	0.40	61060
30.5	.3545527	6006	.8717117	7085	.3782611	2233	69 32 18.9	8.6	0.45	61381
31.0	.3466255	6739	.8744633	4604	.3794549	4171	70 0 62.5	52.1	0.50	61700
31.5	.3386737	7227	.8771534	1508	.3806220	5842	70 29 45.8	35.3	0.55	62016
June 1.0	.3306979	7475	.8797817	7794	.3817623	7246	70 58 28.9	18.3	0.59	62329
1.5	.3226986	7488	.8823479	3456	.3828757	8380	71 27 11.9	1.2	0.62	62638
2.0	.3146764	7271	.8848519	8501	.3839622	9246	71 55 54.6	43.8	0.64	62944
2.5	.3066317	6829	.8872937	2922	.3850217	;9841	72 24 37.1	26.2	0.66	63248
3.0	.2985652	6170	.8896730	6718	.3860541	0166	72 53 19.5	8.5	0.67	63548
3.5	.2904773	5297	.8919896	9887	.3870593	0216	73 21 61.7	50 6	0.67	63845
4.0	.2823686	4215	.8942434	2428	.3880373	;9999	73 50 43.7	32.5	0.66	64138
4.5	+.2742397	2932	+.8964342	4339	+.3889880	9506	74 19 25.5	14.2	−0.64	64427

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1874.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
June 5.0	+.2660910	1451	+.8985617	5618	+.3899113	8740	74° 47′ 67″.2	55″.8	−0″.62	0.00 64711
5.5	.2579232	9779	.9005258	6262	.3908072	7699	75 16 48.8	37.3	0.59	64991
6.0	.2497368	7920	.9026265	6272	.3916755	6383	75 45 30.2	18.6	0.55	65267
6.5	.2415324	5882	.9045635	5645	.3925162	4791	76 13 71.4	59.7	0.51	65539
7.0	.2333106	3670	.9064366	4380	.3933291	2921	76 42 52.5	40.7	0.47	65807
7.5	.2250720	1290	.9082456	2473	.3941143	0774	77 11 33.4	21.5	0.42	66069
8.0	.2168171	8746	.9099904	9925	.3948717	8349	77 40 14.2	2.2	0.36	66326
8.5	.2085464	6045	.9116709	6734	.3956012	5645	78 8 54.9	42.8	0.30	66578
9.0	.2002605	3192	.9132868	2897	.3963027	2661	78 37 35.6	23.4	0.24	66825
9.5	.1919602	:0195	.9148380	8413	.3969761	9396	79 6 16.1	3.8	0.18	67066
10.0	.1836460	7058	.9163245	3282	.3976215	5851	79 34 56.4	44.0	0.11	67302
10.5	.1753185	3789	.9177460	7501	.3982388	2025	80 3 36.6	24.1	−0.04	67532
11.0	.1669783	:0392	.9191024	1069	.3988278	7917	80 32 16.8	4.2	+0.03	67755
11.5	.1586261	6876	.9203936	3985	.3993885	3525	81 0 56.8	44.1	0.10	67972
12.0	.1502624	3244	.9216196	6250	.3999209	8850	81 29 36.6	23.8	0.16	68184
12.5	.1418878	9504	.9227803	7861	.4004249	3891	81 58 16.3	3.4	0.22	68389
13.0	.1335029	5660	.9238755	8818	.4009004	8648	82 26 55.9	42.9	0.27	68588
13.5	.1251085	1722	.9249052	9119	.4013474	3119	82 55 35.4	22.4	0.32	68780
14.0	.1167052	7694	.9258693	8765	.4017660	7307	83 24 14.8	1.7	0.36	68966
14.5	.1082935	3582	.9267677	7753	.4021560	1208	83 52 54.0	40.8	0.40	69146
15.0	.0998741	9393	.9276002	6083	.4025174	4824	84 21 33.0	19.7	0.43	69319
15.5	.0914478	5135	.9283670	3756	.4028502	8153	84 49 71.8	58.4	0.46	69486
16.0	.0830151	0813	.9290680	0771	.4031545	1198	85 18 50.5	37.0	0.48	69646
16.5	.0745767	6434	.9297032	7128	.4034302	3957	85 47 29.1	15.5	0.49	69800
17.0	.0661332	2004	.9302726	2827	.4036773	6430	86 15 67.5	53.8	0.49	69947
17.5	.0576853	7530	.9307760	7866	.4038957	8616	86 44 45.7	31.9	0.48	70089
18.0	.0492336	3018	.9312136	2247	.4040855	0516	87 13 23.8	9.9	0.47	70225
18.5	.0407789	8476	.9315853	5969	.4042467	2130	87 41 61.7	47.7	0.45	70355
19.0	.0323216	3908	.9318912	9033	.4043793	3458	88 10 39.4	25.3	0.42	70478
19.5	.0238624	9321	.9321312	1438	.4044833	4500	88 39 16.9	2.7	0.38	70596
20.0	.0154019	4721	.9323053	3184	.4045587	5256	89 7 54.3	40.0	0.34	70708
20.5	+.0069407	:0114	.9324136	4272	.4046055	5726	89 36 31.5	17.1	0.29	70815
21.0	−.0015207	4496	.9324562	4704	.4046236	5910	90 4 68.6	54.1	0.24	70917
21.5	.0099816	9100	.9324331	4478	.4046132	5808	90 33 45.5	30.9	0.19	71013
22.0	.0184414	3694	.9323443	3596	.4045743	5422	91 2 22.3	7.6	0.13	71104
22.5	.0268995	8270	.9321899	2057	.4045070	4751	91 30 58.9	44.1	0.07	71190
23.0	.0353553	2824	.9319699	9863	.4044113	3797	91 59 35.3	20.4	+0.01	71272
23.5	.0438082	7348	.9316844	7013	.4042871	2557	92 27 71.6	56.6	−0.06	71349
24.0	.0522577	1839	.9313336	3511	.4041345	1034	92 56 47.7	32.7	0.13	71422
24.5	.0607032	6289	.9309174	9355	.4039536	9227	93 25 23.8	8.7	0.20	71490
25.0	.0691442	0695	.9304359	4546	.4037443	7137	93 53 59.8	44.6	0.27	71555
25.5	.0775800	5048	.9298891	9084	.4035067	4763	94 22 35.7	20.2	0.33	71616
26.0	.0860102	:9346	.9292772	2971	.4032408	2107	94 50 71.4	56.0	0.39	71672
26.5	.0944341	3581	.9286002	6207	.4029467	9169	95 19 47.0	31.5	0.44	71724
27.0	.1028512	7748	.9278581	8792	.4026245	5950	95 48 22.6	7.0	0.48	71774
27.5	.1112610	1842	.9270510	0727	.4022741	2448	96 16 58.1	42.4	0.52	71820
28.0	.1196629	5857	.9261790	2014	.4018956	8666	96 45 33.6	17.8	0.55	71862
28.5	.1280564	:9788	.9252422	2652	.4014890	4603	97 13 69.0	53.1	0.58	71900
29.0	.1364409	3629	.9242406	2643	.4010543	0259	97 42 44.4	28.4	0.60	71934
29.5	.1448159	7375	.9231743	1986	.4005915	5634	98 11 19.8	3.7	0.62	71964
30.0	.1531808	1021	.9220434	0684	.4001007	0729	98 39 55.2	39.0	0.63	71991
30.5	.1615351	4560	.9208479	8736	.3995820	5545	99 8 30.6	14.3	0.63	72014
July 1.0	.1698782	7988	.9195878	6142	.3990353	0081	99 36 65.9	49.5	0.63	72034
1.5	.1782096	1298	.9182633	2904	.3984607	4338	100 5 41.4	24.9	0.62	72050
2.0	.1865287	4486	.9168745	9023	.3978581	8315	100 34 16.9	0.3	0.60	72062
2.5	.1948350	7545	.9154214	4499	.3972277	2014	101 2 52.3	35.6	0.58	72070
3.0	.2031278	0470	.9139041	9334	.3965694	5435	101 31 27.7	10.9	0.55	72075
3.5	.2114068	3256	.9123226	3526	.3958834	8578	101 59 63.3	46.5	0.52	72075
4.0	.2196713	5898	.9106771	7078	.3951696	1444	102 28 38.9	22.0	0.48	72071
4.5	.2279207	8389	.9089676	9990	.3944280	4031	102 56 74.6	57.6	0.43	72063
5.0	.2361545	0724	.9071940	2261	.3936587	6342	103 25 50.5	33.4	0.38	72050
5.5	−.2443722	2898	+.9053566	3894	+.3928617	8375	103 54 26.5	9.3	−0.32	72032

NOTE.—: denotes a change in the preceding figure.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1874.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
July 6.0	−.2525731	4904	+.9034555	4890	+.3920370	0132	104° 22′ 62″.6	45″.3	−0″.26	0.00 72009
6.5	.2607565	6735	.9014905	5247	.3911848	1613	104 51 38.7	21.3	0.19	71982
7.0	.2689219	8387	.8994618	4967	.3903050	2819	105 19 74.9	57.4	0.12	71949
7.5	.2770687	;9852	.8973696	4052	.3893976	3749	105 48 51.3	33.7	−0.05	71910
8.0	.2851964	1127	.8952140	2503	.3884627	4404	106 17 27.8	10.1	+0.03	71865
8.5	.2933043	2204	.8929952	;0322	.3875003	4784	106 45 64.4	46.6	0.10	71815
9.0	.3013919	3078	.8907134	7512	.3865104	4889	107 14 41.0	23.1	0.16	71759
9.5	.3094585	3742	.8883686	4071	.3854932	4721	107 42 77.8	59.8	0.22	71696
10.0	.3175035	4190	.8859609	;0002	.3844488	4280	108 11 54.7	36.6	0.28	71628
10.5	.3255263	4416	.8834904	5304	.3833770	3566	108 40 31.7	13.5	0.33	71554
11.0	.3335262	4413	.8809573	9981	.3822780	2580	109 8 68.7	50.4	0.38	71473
11.5	.3415027	4176	.8783618	4033	.3811520	1324	109 37 45.9	27.5	0.42	71386
12.0	.3494552	3700	.8757042	7465	.3799991	9799	110 6 23.2	4.7	0.45	71292
12.5	.3573831	2977	.8729845	;0275	.3788191	8003	110 34 60.6	42.0	0.48	71192
13.0	.3652857	2002	.8702028	2466	.3776122	5939	111 3 38.2	19.5	0.50	71085
13.5	.3731624	0767	.8673596	4041	.3763786	3607	111 31 75.8	57.1	0.51	70972
14.0	.3810127	;9269	.8644550	5003	.3751183	1008	112 0 53.5	34.7	0.52	70852
14.5	.3888359	7500	.8614892	5353	.3738313	8142	112 29 31.3	12.4	0.52	70726
15.0	.3966315	5455	.8584623	5092	.3725178	5012	112 57 69.2	50.2	0.51	70593
15.5	.4043989	3128	.8553747	4223	.3711780	1618	113 26 47.1	28.0	0.49	70454
16.0	.4121375	0513	.8522266	2750	.3698119	7961	113 55 25.1	5.9	0.46	70308
16.5	.4198466	7603	.8490182	0674	.3684196	4042	114 13 63.2	43.9	0.43	70156
17.0	.4275258	4395	.8457497	7997	.3670010	;9861	114 52 41.4	22.0	0.39	69997
17.5	.4351745	0881	.8424215	4723	.3655566	5421	115 21 19.7	0.2	0.35	69833
18.0	.4427922	7058	.8390338	0854	.3640864	0724	115 49 58.1	38.5	0.30	69663
18.5	.4503783	2919	.8355868	6392	.3625904	5768	116 18 36.5	16.9	0.25	69487
19.0	.4579322	8458	.8320808	1340	.3610687	0556	116 46 74.9	55.2	0.19	69305
19.5	.4654534	3670	.8285162	5702	.3595216	5089	117 15 53.5	33.7	0.12	69118
20.0	.4729415	8551	.8248933	9481	.3579493	9371	117 44 32.2	12.3	+0.06	68925
20.5	.4803957	3093	.8212123	2679	.3563517	3399	118 12 70.9	50.9	0.00	68727
21.0	.4878157	7293	.8174735	5299	.3547290	7177	118 41 49.6	29.5	−0.07	68524
21.5	.4952009	1145	.8136773	7345	.3530813	0704	119 10 28.4	8.2	0.13	68317
22.0	.5025509	4646	.8098240	8820	.3514089	3985	119 38 67.3	47.0	0.20	68105
22.5	.5098651	7788	.8059138	9726	.3497119	7019	120 7 46.3	25.9	0.26	67888
23.0	.5171430	0568	.8019469	;0065	.3479903	9809	120 36 25.4	4.9	0.32	67667
23.5	.5243841	2980	.7979238	9842	.3462442	2352	121 4 64.7	44.2	0.38	67443
24.0	.5315881	5021	.7938446	9058	.3444739	4654	121 33 44.0	23.4	0.43	67214
24.5	.5387544	6685	.7897097	7717	.3426794	6714	122 2 23.4	2.7	0.48	66981
25.0	.5458825	7967	.7855193	5821	.3408608	8533	122 30 63.0	42.2	0.52	66744
25.5	.5529719	8862	.7812738	3374	.3390185	0115	122 59 42.7	21.8	0.55	66503
26.0	.5600223	;9367	.7769734	;0378	.3371523	1458	123 28 22.6	1.6	0.58	66259
26.5	.5670332	;9477	.7726185	6837	.3352624	2564	123 56 62.6	41.5	0.60	66012
27.0	.5740042	;9189	.7682092	2752	.3333490	3435	124 25 42.8	21.6	0.62	65761
27.5	.5809347	8495	.7637460	8128	.3314122	4072	124 54 23.3	2.1	0.62	65507
28.0	.5878243	7393	.7592291	2967	3294522	4477	125 22 63.9	42.6	0.63	65250
28.5	.5946726	5878	.7546587	7271	.3274691	4651	125 51 44.6	23.3	0.62	64990
29.0	.6014792	3946	.7500352	1044	.3254631	4596	126 20 25.5	4.1	0.60	64727
29.5	.6082435	1591	.7453590	4290	.3234341	4311	126 48 66.7	45.2	0.57	64461
30.0	.6149651	8809	.7406303	7011	.3213824	3798	127 17 48.2	26.6	0.54	64192
30.5	.6216435	5595	.7358494	9210	.3193080	3060	127 46 29.9	8.2	0.50	64919
31.0	.6282782	1945	.7310166	0891	.3172111	2097	128 14 71.8	50.0	0.46	63643
31.5	.6348688	7853	.7261322	2055	.3150918	0909	128 43 54.0	32.1	0.41	63363
Aug. 1.0	.6414148	3316	.7211965	2706	.3129503	9499	129 12 36.4	14.4	0.36	63080
1.5	.6479159	8330	.7162098	2847	.3107867	7868	129 40 79.1	57.1	0.31	62794
2.0	.6543715	2889	.7111723	2480	.3086010	6017	130 9 62.1	40.0	0.25	62504
2.5	.6607812	6989	.7060844	1609	.3063935	3948	130 38 45.5	23.4	0.18	62210
3.0	.6671443	0623	.7009463	;0236	.3041643	1662	131 7 29.1	6.9	0.12	61913
3.5	.6734605	3788	.6957584	8365	.3019135	9159	131 35 73.0	50.7	−0.05	61612
4.0	.6797293	6479	.6905209	5998	.2996411	6440	132 4 57.3	34.9	+0.01	61307
4.5	.6859503	8692	.6852342	3139	.2973475	3509	132 33 41.9	19.4	0.08	60997
5.0	.6921229	0422	.6798986	9791	.2950326	0366	133 2 26.9	4.3	0.14	60683
5.5	−.6982467	1663	+.6745145	5957	+.2926967	7012	133 30 72.2	49.6	+0.20	60365

Note.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date. 1874.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Aug. 6.0	−.7043211	2411	+.6690822	1642	+.2903398	3449	133° 59′ 57″.8	35″.1	+0″.26	0.00 60042
6.5	.7103458	2662	.6636021	6849	.2879622	9678	134 28 43.8	21.1	0.31	59714
7.0	.7163202	2410	.6580745	1581	.2855640	5702	134 57 30.1	7.3	0.36	59381
7.5	.7222438	1650	.6524998	5841	.2831452	1519	135 25 76.7	53.9	0.40	59043
8.0	.7281162	0378	.6468784	9635	.2807060	7133	135 54 63.7	40.8	0.44	58699
8.5	.7339368	8588	.6412107	2965	.2782468	2546	136 23 51.0	28.0	0.47	58350
9.0	.7397052	6277	.6354971	5837	.2757677	7761	136 52 38.6	15.5	0.50	57996
9.5	.7454209	3438	.6297381	8254	.2732688	2777	137 21 26.5	3.3	0.52	57636
10.0	.7510835	0069	.6239340	:0221	.2707502	7597	137 49 74.8	51.5	0.53	57271
10.5	.7566924	6163	.6180852	1740	.2682122	2222	138 18 63.4	40.0	0.53	56900
11.0	.7622473	1717	.6121922	2818	.2656550	6656	138 47 52.3	28.8	0.52	56524
11.5	.7677477	6726	.6062553	3456	.2630787	0899	139 16 41.5	18.0	0.50	56142
12.0	.7731931	1185	.6002749	3659	.2604835	4953	139 45 31.1	7.5	0.48	55755
12.5	.7785832	5091	.5942517	3434	.2578697	8821	140 13 81.0	57.4	0.45	55362
13.0	.7839176	8441	.5881860	2784	.2552374	2503	140 42 71.1	47.4	0.42	54964
13.5	.7891958	1228	.5820782	1713	.2525868	6002	141 11 61.6	37.8	0.38	54561
14.0	.7944173	3449	.5759287	:0225	.2499181	9321	141 40 52.4	28.5	0.33	54152
14.5	.7995819	5100	.5697381	8326	.2472315	2461	142 9 43.5	19.5	0.28	53738
15.0	.8046892	6179	.5635069	6021	.2445273	5424	142 38 34.8	10.7	0.22	53319
15.5	.8097386	6679	.5572354	3313	.2418056	8213	143 7 26.5	2.4	0.16	52894
16.0	.8147298	6597	.5509241	:0207	.2390666	0828	143 35 78.5	54.3	0.10	52464
16.5	.8196626	5931	.5445737	6710	.2363106	3294	144 4 70.7	46.5	+0.03	52031
17.0	.8245365	4676	.5381846	2826	.2335378	5551	144 33 63.2	38.9	−0.03	51592
17.5	.8293512	2829	.5317572	8559	.2307484	7663	145 2 56.0	31.6	0.09	51148
18.0	.8341063	0387	.5252919	3912	.2279425	9609	145 31 49.1	24.6	0.16	50699
18.5	.8388015	7345	.5187894	8894	.2251205	1395	146 0 42.5	17.9	0.23	50248
19.0	.8434366	3703	.5122501	3508	.2222826	3022	146 29 36.1	11.4	0.29	49792
19.5	.8480111	9454	.5056744	7757	.2194289	4491	146 58 30.0	5.3	0.35	49332
20.0	.8525247	4597	.4990629	1649	.2165596	5803	147 26 84.2	59.4	0.40	48869
20.5	.8569771	9128	.4924161	5187	.2136751	6964	147 55 78.7	53.9	0.45	48402
21.0	.8613681	3045	.4857344	8477	.2107755	7974	148 24 73.5	48.6	0.49	47932
21.5	.8656974	6345	.4790183	1222	.2078609	8834	148 53 68.6	43.7	0.53	47458
22.0	.8699646	9025	.4722682	3727	.2049317	9547	149 22 64.0	39.0	0.57	46982
22.5	.8741695	1081	.4654846	5897	.2019880	0116	149 51 59.7	34.7	0.60	46504
23.0	.8783119	2513	.4586681	7738	.1990300	0541	150 20 55.7	30.6	0.62	46023
23.5	.8823914	3315	.4518190	9254	.1960579	0826	150 49 52.0	26.8	0.63	45540
24.0	.8864078	3487	.4449378	:0447	.1930720	0972	151 18 48.7	23.4	0.63	45055
24.5	.8903609	3025	.4380250	1325	.1900724	0982	151 47 45.8	20.5	0.62	44567
25.0	.8942504	1928	.4310811	1892	.1870593	0856	152 16 43.2	17.8	0.61	44077
25.5	.8980759	0191	.4241065	2152	.1840329	0598	152 45 40.9	15.5	0.59	43585
26.0	.9018372	7812	.4171017	2109	.1809934	:0208	153 14 39.0	13.5	0.56	43092
26.5	.9055342	4790	.4100671	1769	.1779410	9690	153 43 37.6	12.1	0.52	42597
27.0	.9091665	1121	.4030033	1136	.1748760	9045	154 12 36.5	10.9	0.48	42101
27.5	.9127338	6802	.3959107	:0216	.1717985	8276	154 41 35.8	10.2	0.43	41602
28.0	.9162358	1831	.3887898	9012	.1687086	7382	155 10 35.5	9.8	0.38	41102
28.5	.9196724	6205	.3816410	7530	.1656067	6369	155 39 35.6	9.8	0.33	40600
29.0	.9230432	:9922	.3744647	5772	.1624930	5237	156 8 36.2	10.3	0.27	40097
29.5	.9263480	2978	.3672615	3745	.1593675	3988	156 37 37.2	11.3	0.21	39592
30.0	.9295865	5372	.3600318	1453	.1562305	2623	157 6 38.6	12.6	0.15	39085
30.5	.9327586	7102	.3527761	8901	.1530823	1147	157 35 40.5	14.5	0.09	38577
31.0	.9358638	8163	.3454948	6093	.1499231	9560	158 4 42.9	16.8	−0.02	38067
31.5	.9389020	8553	.3381885	3035	.1467529	7864	158 33 45.7	19.6	+0.04	37554
Sept. 1.0	.9418726	8269	.3308575	9729	.1435720	6060	159 2 49.0	22.8	0.11	37039
1.5	.9447756	7308	.3235024	6183	.1403807	4153	159 31 52.9	26.7	0.18	36522
2.0	.9476108	5669	.3161237	2400	.1371792	2143	160 0 57.2	30.9	0.24	36003
2.5	.9503779	3349	.3087218	8386	.1339675	:0032	160 29 62.0	35.7	0.30	35482
3.0	.9530765	0345	.3012972	4144	.1307459	7821	160 58 67.4	41.0	0.35	34958
3.5	.9557063	6652	.2938505	9682	.1275149	5517	161 27 73.2	46.8	0.39	34431
4.0	.9582672	2271	.2863823	5004	.1242744	3117	161 56 79.6	53.1	0.43	33901
4.5	.9607589	7197	.2788930	:0115	.1210247	0626	162 26 26.5	0.0	0.46	33369
5.0	.9631812	1430	.2713831	5020	.1177661	8045	162 55 33.9	7.3	0.49	32834
5.5	−.9655337	4964	+.2638533	9726	+.1144988	5378	163 24 41.7	15.1	+0.51	32295

Note.—: denotes a change in the preceding figure.

Date. 1874.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Sept. 6.0	—.9678163	7800	+.2563041	4238	+.1112231	2626	163° 53′ 50″.0	23″.3	+0″.53	0.00 31753
6.5	.9700287	:9934	.2487361	8562	.1079391	9791	164 22 58.9	32.1	0.53	31208
7.0	.9721706	1363	.2411498	2702	.1046471	6876	164 51 68.3	41.4	0.53	30660
7.5	.9742419	2086	.2335458	6666	.1013474	3885	165 20 78.2	51.2	0.52	30109
8.0	.9762424	2101	.2259246	:0457	.0980402	0818	165 40 28.5	1.4	0.50	29554
8.5	.9781719	1406	.2182868	4083	.0947257	7678	166 19 39.3	12.2	0.47	28996
9.0	.9800300	:9998	.2106329	7547	.0914042	4468	166 48 50.6	23.4	0.44	28433
9.5	.9818167	7875	.2029635	:0856	.0880760	1191	167 17 62.4	35.2	0.40	27866
10.0	.9835318	5037	.1952793	4017	.0847414	7849	167 46 74.7	47.4	0.35	27296
10.5	.9851751	1480	.1875807	7034	.0814003	4443	168 16 27.5	0.2	0.30	26723
11.0	.9867465	7205	.1798683	9913	.0780532	0978	168 45 40.7	13.3	0.25	26146
11.5	.9882458	2208	.1721429	2662	.0747005	7456	169 14 54.4	27.0	0.19	25565
12.0	.9896729	6490	.1644050	5286	.0713424	3880	169 43 68.5	41.0	0.13	24981
12.5	.9910276	0048	.1566552	7791	.0679791	:0252	170 12 83.1	55.6	+0.06	24394
13.0	.9923097	2880	.1488940	:0181	.0646109	6575	170 42 38.2	10.6	0.00	23803
13.5	.9935192	4986	.1411222	2466	.0612381	2852	171 11 53.6	26.0	—0.07	23209
14.0	.9946560	6366	.1333403	4649	.0578609	9085	171 40 69.4	41.7	0.14	22612
14.5	.9957200	7016	.1255489	6738	.0544795	5276	172 9 85.7	58.0	0.21	22012
15.0	.9967111	6938	.1177487	8738	.0510943	1429	172 39 42.5	14.7	0.27	21410
15.5	.9976293	6132	.1099401	:0654	.0477056	7547	173 8 59.8	32.0	0.33	20805
16.0	.9984746	4595	.1021238	2493	.0443135	3631	173 37 77.4	49.5	0.39	20197
16.5	.9992468	2328	.0943004	4261	.0409183	9684	174 7 35.4	7.5	0.45	19588
17.0	.9999458	9330	.0864703	5962	.0375202	5707	174 36 53.8	25.8	0.50	18975
17.5	1.0005718	5601	.0786343	7604	.0341196	1706	175 5 72.6	44.5	0.54	18362
18.0	1.0011247	1142	.0707929	9191	.0307167	7681	175 35 31.9	3.7	0.58	17747
18.5	1.0016043	5949	.0629466	:0730	.0273117	3636	176 4 51.6	23.4	0.61	17130
19.0	1.0020107	0025	.0550959	2224	.0239050	9573	176 33 71.7	43.4	0.63	16512
19.5	1.0023439	3368	.0472416	3683	.0204967	5495	177 3 32.2	3.9	0.64	15893
20.0	1.0026040	5981	.0393842	5110	.0170871	1403	177 32 53.2	24.8	0.65	15273
20.5	1.0027909	7861	.0315243	6512	.0136764	7301	178 1 74.6	46.2	0.65	14652
21.0	1.0029045	9009	.0236623	7893	.0102649	3190	178 31 36.4	7.9	0.64	14031
21.5	1.0029448	9424	.0157989	9260	.0068526	9074	179 0 58.6	30.1	0.62	13411
22.0	1.0029120	9108	.0079347	:0619	.0034403	4953	179 30 81.3	52.7	0.60	12790
22.5	1.0028060	8060	+.0000701	1974	+.0000277	0831	179 59 44.4	15.8	0.57	12169
23.0	1.0026268	6280	—.0077943	6669	—.0033847	3289	180 28 67.9	39.2	0.53	11549
23.5	1.0023743	3767	.0156579	5304	.0067968	7405	180 58 32.0	3.3	0.48	10929
24.0	1.0020486	0522	.0235203	3928	.0102084	1517	181 27 56.6	27.8	0.43	10309
24.5	1.0016497	6545	.0313808	2532	.0136192	5621	181 56 81.6	52.8	0.37	09690
25.0	1.0011776	1836	.0392389	1113	.0170288	:9713	182 26 47.1	18.2	0.31	09071
25.5	1.0006323	6395	.0470941	9664	.0204372	3793	182 55 73.1	44.2	0.24	08453
26.0	1.0000138	0222	.0549459	8182	.0238441	7858	183 25 39.6	10.6	0.18	07836
26.5	.9993221	3317	.0627936	6659	.0272492	1905	183 54 66.6	37.6	0.12	07219
27.0	.9985572	5681	.0706368	5091	.0306523	5932	184 24 34.1	5.0	—0.04	06603
27.5	.9977192	7313	.0784750	3473	.0340533	:9938	184 53 62.1	33.0	+0.03	05988
28.0	.9968080	8213	.0863077	1800	.0374518	3919	185 23 30.7	1.5	0.10	05373
28.5	.9958236	8381	.0941343	0066	.0408477	7874	185 52 59.8	30.6	0.16	04759
29.0	.9947660	7818	.1019540	8264	.0442407	1800	186 22 29.5	0.2	0.22	04146
29.5	.9936354	6524	.1097666	6390	.0476306	5695	186 51 59.8	30.5	0.28	03533
30.0	.9924317	4500	.1175715	4440	.0510172	:9557	187 21 30.7	1.3	0.33	02920
30.5	.9911549	1744	.1253680	2405	.0544002	3383	187 50 62.1	32.7	0.37	02309
Oct. 1.0	.9898049	8257	.1331556	0282	.0577794	7172	188 20 34.0	4.5	0.42	01699
1.5	.9883819	4039	.1409338	8065	.0611544	0917	188 49 66.5	36.9	0.45	01087
2.0	.9868859	9092	.1487020	5748	.0645252	4623	189 19 39.7	10.0	0.48	00476
2.5	.9853169	3414	.1564595	3324	.0678914	8281	189 48 73.4	43.7	0.50	◆99866
3.0	.9836750	7008	.1642058	0788	.0712528	1892	190 18 47.6	17.8	0.52	99256
3.5	.9819602	9872	.1719404	8135	.0746090	5450	190 47 82.5	52.7	0.52	98644
4.0	.9801725	2008	.1796626	5359	.0779600	8957	191 17 58.0	28.1	0.52	98032
4.5	.9783119	3415	.1873718	2452	.0813053	2407	191 47 34.1	4.2	0.51	97420
5.0	.9763785	4094	.1950673	:9409	.0846447	5798	192 16 70.7	40.7	0.50	96807
5.5	.9743725	4046	.2027486	6223	.0879779	9127	192 46 47.9	17.9	0.48	96193
6.0	.9722939	3273	.2104151	2890	.0913048	2393	193 15 85.7	55.6	0.45	95578
6.5	—.9701428	1775	—.2180662	:9403	—.0946251	5593	193 45 64.1	34.0	+0.41	94963

◆ The first figures of this and the following logarithms are 9.99.

Date. 1874.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	9.99
Oct. 7.0	—.9679193	9553	—.2257012	5755	—.0979385	8724	194 15 42.9	12.7	+0.37	94347
7.5	.9656235	6607	.2333195	1940	.1012447	1783	194 44 82.3	52.1	0.32	93729
8.0	.9632556	2941	.2409206	7953	.1045435	4768	195 14 62.3	32.0	0.27	93111
8.5	.9608157	8555	.2485040	3789	.1078345	7675	195 44 42.9	12.6	0.22	92492
9.0	.9583039	3450	.2560689	:9440	.1111175	0503	196 13 84.0	53.6	0.16	91872
9.5	.9557203	7627	.2636146	4899	.1143922	3247	196 43 65.6	35.2	0.10	91250
10.0	.9530652	1089	.2711407	0163	.1176584	5907	197 13 47.8	17.3	+0.03	90627
10.5	.9503387	3837	.2786465	5224	.1209158	8478	197 43 30.5	0.0	—0.03	90004
11.0	.9475410	5873	.2861314	0076	.1241641	0959	198 12 73.6	43.0	0.10	89380
11.5	.9446724	7200	.2935947	4712	.1274031	3346	198 42 57.2	26.5	0.17	88755
12.0	.9417330	7819	.3010359	:9127	.1306325	5638	199 12 41.3	10.5	0.23	88129
12.5	.9387230	7732	.3084544	3315	.1338520	7830	199 41 85.9	55.1	0.29	87502
13.0	.9356426	6941	.3158496	7270	.1370613	:9921	200 11 71.0	40.1	0.35	86875
13.5	.9324922	5450	.3232210	0987	.1402602	1908	200 41 56.6	25.7	0.41	86247
14.0	.9292720	3261	.3305680	4460	.1434486	3790	201 11 42.6	11.6	0.46	85619
14.5	.9259822	:0376	.3378898	7681	.1466261	5563	201 40 89.1	58.1	0.51	84990
15.0	.9226230	6797	.3451859	0646	.1497923	7223	202 10 76.0	44.9	0.55	84362
15.5	.9191949	2529	.3524560	3350	.1529471	8769	202 40 63.3	32.1	0.58	83735
16.0	.9156981	7574	.3596994	5788	.1560904	0200	203 10 51.1	19.8	0.61	83108
16.5	.9121328	1934	.3669156	7954	.1592218	1512	203 40 39.4	8.1	0.62	82481
17.0	.9084993	5612	.3741039	:9841	.1623411	2704	204 9 88.0	56.6	0.63	81856
17.5	.9047979	8611	.3812638	1444	.1654480	3771	204 39 77.0	45.6	0.62	81237
18.0	.9010289	0934	.3883949	2759	.1685424	4713	205 9 66.5	35.0	0.61	80610
18.5	.8971926	2584	.3954964	3778	.1716240	5527	205 39 56.5	25.0	0.59	79988
19.0	.8932892	3564	.4025679	4498	.1746925	6211	206 9 46.9	15.3	0.57	79368
19.5	.8893191	3876	.4096091	4914	.1777477	6762	206 39 37.7	6.1	0.54	78751
20.0	.8852826	3524	.4166193	5021	.1807896	7179	207 8 89.0	57.3	0.50	78136
20.5	.8811799	2510	.4235980	4812	.1838178	7460	207 38 80.7	48.9	0.46	77522
21.0	.8770113	0837	.4305446	4283	.1868320	7601	208 8 72.8	40.9	0.42	76912
21.5	.8727772	8509	.4374588	3429	.1898320	7599	208 38 65.3	33.3	0.37	76303
22.0	.8684779	5529	.4443401	2247	.1928177	7455	209 8 58.3	26.2	0.31	75697
22.5	.8641136	1899	.4511879	0730	.1957890	7167	209 38 51.8	19.7	0.25	75094
23.0	.8596845	7622	.4580018	:8874	.1987454	6730	210 8 45.7	13.5	0.19	74494
23.5	.8551912	2702	.4647812	6673	.2016868	6143	210 38 40.1	7.9	0.13	73897
24.0	.8506339	7142	.4715257	4123	.2046131	5405	211 8 34.9	2.6	—0.06	73304
24.5	.8460129	0945	.4782348	1219	.2075241	4514	211 37 90.2	57.9	+0.01	72714
25.0	.8413284	4113	.4849081	7958	.2104196	3468	212 7 86.0	53.6	0.08	72127
25.5	.8365809	6651	.4915450	4332	.2132992	2263	212 37 82.3	49.8	0.14	71544
26.0	.8317706	8561	.4981451	0339	.2161628	0899	213 7 79.0	46.4	0.21	70964
26.5	.8268978	9846	.5047078	5971	.2190104	:9374	213 37 76.3	43 7	0.28	70388
27.0	.8219629	:0511	.5112327	1226	.2218416	7686	214 7 74.1	41.4	0.32	69815
27.5	.8169660	:0555	.5177193	6097	.2246561	5830	214 37 72.4	39.7	0.37	69246
28.0	.8119075	9983	.5241672	0583	.2274539	3808	215 7 71.2	38.4	0.41	68680
28.5	.8067877	8798	.5305758	4674	.2302347	1616	215 37 70.5	37.7	0.45	68117
29.0	.8016068	7002	.5369446	8369	.2329982	9251	216 7 70.4	37.5	0.49	67558
29.5	.7963653	4600	.5432732	1661	.2357442	6711	216 37 70.8	37.8	0.52	67002
30.0	.7910635	1595	.5495611	4546	.2384726	3995	217 7 71.7	38.6	0.54	66449
30.5	.7857016	7989	.5558078	7019	.2411832	1101	217 37 73.2	40.0	0.55	65899
31.0	.7802800	3786	.5620127	:9075	.2438756	8025	218 7 75.3	42.0	0.56	65352
31.5	.7747994	8993	.5681752	0706	.2465497	4766	218 37 77.9	44.5	0.55	64808
Nov. 1.0	.7692599	3611	.5742950	1911	.2492053	1322	219 7 81.0	47.5	0.54	64267
1.5	.7636619	7644	.5803715	2683	.2518422	7691	219 37 84.6	51.1	0.52	63729
2.0	.7580056	1094	.5864043	3018	.2544601	3871	220 7 88.6	55.0	0.49	63193
2.5	.7522915	3966	.5923927	2909	.2570588	:9858	220 37 93.2	59.6	0.46	62659
3.0	.7465200	6264	.5983363	2352	.2596382	5653	221 8 38.3	4.6	0.42	62127
3.5	.7406913	7990	.6042347	1341	.2621980	1251	221 38 44.0	10.2	0.38	61598
4.0	.7348059	9149	.6100873	:9874	.2647378	6650	222 8 50.3	16.4	0.33	61072
4.5	.7288644	9746	.6158936	7946	.2672576	1848	222 38 57.0	23.1	0.28	60546
5.0	.7228671	9786	.6216532	5550	.2697572	6845	223 8 64.2	30.2	0.22	60022
5.5	.7168143	9271	.6273654	2680	.2722363	1637	223 38 71.9	37.9	0.16	59501
6.0	.7107064	8204	.6330299	:9333	.2746946	6221	224 8 80.2	46.1	0.10	58981
6.5	—.7045440	6593	—.6386461	5503	—.2771319	0595	224 38 88.9	54.8	+0.03	58463

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

SUN'S COÖRDINATES, 1874.

Date. 1874.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Nov. 7.0	—.6983276	4442	—.6442135	1185	—.2795481	4758	225° 9′ 38″.1	3″.9	—0″.03	9.99 57947
7.5	.6920576	1755	.6497317	6375	.2819430	8708	225 39 47.7	13.5	0.10	57431
8.0	.6857345	8536	.6552001	1067	.2843163	2442	226 9 57.7	23.4	0.16	56916
8.5	.6793589	4793	.6606184	5258	.2866678	5958	226 39 68.2	33.8	0.22	56404
9.0	.6729312	:0528	.6659861	8944	.2889973	9254	227 9 79.2	44.7	0.28	55894
9.5	.6664518	5747	.6713026	2117	.2913046	2328	227 39 90.5	55.9	0.34	55385
10.0	.6599213	:0454	.6765675	4775	.2935895	5179	228 10 42.2	7.5	0.39	54878
10.5	.6533404	4658	.6817805	6913	.2958518	7803	228 40 54.3	19.5	0.43	54374
11.0	.6467095	8361	.6869412	8529	.2980914	0201	229 10 66.9	32.0	0.47	53871
11.5	.6400291	1569	.6920490	:9616	.3003081	2370	229 40 79.8	44.9	0.50	53370
12.0	.6332996	4286	.6971036	0171	.3025016	4307	230 10 93.1	58.1	0.52	52871
12.5	.6265219	6521	.7021046	0189	.3046718	6011	230 41 46.7	11.6	0.53	52376
13.0	.6196964	8279	.7070516	:9669	.3068185	7480	231 11 60.7	25.5	0.54	51883
13.5	.6128237	9564	.7119442	8604	.3089416	8713	231 41 75.0	39.7	0.54	51392
14.0	.6059042	:0381	.7167820	6992	.3110408	:9707	232 11 89.7	54.3	0.53	50903
14.5	.5989385	:0736	.7215646	4827	.3131160	0461	232 42 44.7	9.2	0.51	50418
15.0	.5919273	:0636	.7262917	2108	.3151670	0973	233 12 60.0	24.4	0.49	49936
15.5	.5848710	:0085	.7309629	8829	.3171938	1243	233 42 75.7	40.1	0.47	49457
16.0	.5777702	9089	.7355777	4987	.3191961	1269	234 12 91.6	55.9	0.44	48982
16.5	.5706255	7654	.7401359	0579	.3211738	1048	234 43 47.9	12.2	0.40	48511
17.0	.5634374	5785	.7446373	5603	.3231269	0582	235 13 64.5	28.7	0.36	48044
17.5	.5562065	3488	.7490814	0054	.3250550	:9865	235 43 81.3	45.5	0.31	47581
18.0	.5489333	:0767	.7534679	3930	.3269581	8899	236 14 38.3	2.4	0.26	47123
18.5	.5416184	7630	.7577966	7228	.3288361	7682	236 44 55.7	19.7	0.20	46671
19.0	.5342623	4080	.7620671	:9943	.3306889	6213	237 14 73.4	37.3	0.14	46223
19.5	.5268656	:0125	.7662791	2073	.3325163	4490	237 44 91.5	55.3	0.08	45778
20.0	.5194289	5769	.7704323	3616	.3343182	2512	238 15 49.9	13.6	—0.01	45338
20.5	.5119527	:1018	.7745265	4568	.3360945	0278	238 45 68.6	32.2	+0.07	44904
21.0	.5044374	5876	.7785614	4928	.3378451	7787	239 15 87.6	51.1	0.14	44476
21.5	.4968837	:0351	.7825366	4691	.3395697	5036	239 46 46.9	10.4	0.21	44053
22.0	.4892921	4446	.7864517	3853	.3412682	2024	240 16 66.6	30.0	0.27	43635
22.5	.4816630	8166	.7903067	2414	.3429406	8751	240 46 86.6	49.9	0.33	43223
23.0	.4739971	:1518	.7941012	0370	.3445868	5217	241 17 46.9	10.1	0.39	42817
23.5	.4662949	4507	.7978349	7718	.3462067	1419	241 47 67.5	30.6	0.45	42416
24.0	.4585570	7139	.8015075	4456	.3478001	7357	242 17 88.5	51.5	0.50	42022
24.5	.4507839	9419	.8051188	0580	.3493669	3028	242 48 49.9	12.8	0.54	41634
25.0	.4429762	:1352	.8086684	6088	.3509069	8432	243 18 71.6	34.4	0.58	41251
25.5	.4351343	2944	.8121560	0975	.3524201	3568	243 48 93.6	56.3	0.61	40874
26.0	.4272589	4200	.8155813	5241	.3539063	8434	244 19 56.0	18.6	0.63	40503
26.5	.4193506	5128	.8189442	8882	.3553654	3029	244 49 78.7	41.3	0.64	40138
27.0	.4114099	5732	.8222443	1895	.3567974	7353	245 20 41.8	4.3	0.65	39778
27.5	.4034374	6018	.8254812	4276	.3582020	1403	245 50 65.2	27.6	0.65	39424
28.0	.3954335	5989	.8286547	6023	.3595790	5178	246 20 89.0	51.3	0.64	39076
28.5	.3873990	5654	.8317646	7134	.3609285	8677	246 51 53.2	15.4	0.62	38733
29.0	.3793344	5018	.8348106	7607	.3622504	1900	247 21 77.7	39.8	0.60	38396
29.5	.3712401	4085	.8377924	7437	.3635444	4844	247 52 42.5	4.5	0.57	38063
30.0	.3631168	2862	.8407096	6622	.3648104	7509	248 22 67.7	29.6	0.53	37735
30.5	.3549651	:1355	.8435621	5160	.3660484	:9893	248 52 93.3	55.1	0.49	37411
Dec. 1.0	.3467856	9570	.8463496	3048	.3672582	1996	249 23 59.2	20.9	0.44	37093
1.5	.3385789	7513	.8490718	0283	.3684397	3816	249 53 85.5	47.2	0.39	36780
2.0	.3303456	5189	.8517283	6861	.3695927	5351	250 24 52.2	13.8	0.33	36472
2.5	.3220863	2606	.8543191	2782	.3707172	6601	250 54 79.2	40.7	0.27	36168
3.0	.3138017	9769	.8568439	8043	.3718131	7564	251 25 46.5	7.9	0.20	35868
3.5	.3054923	6684	.8593023	2640	.3728803	8241	251 55 74.2	35.5	0.14	35573
4.0	.2971588	3358	.8616941	6572	.3739185	8628	252 26 42.2	3.4	0.07	35281
4.5	—.2888020	9799	—.8640191	:9835	—.3749278	8726	252 56 70.4	31.5	+0.01	34993

NOTE.—: denotes a change in the preceding figure.

Date. 1874.	RECTANGULAR EQUATORIAL. X.	X′.	Y.	Y′.	Z.	Z′.	POLAR ECLIPTIC. λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Dec. 5.0	−.2804226	6014	−.8662771	2429	−.3759080	8532	253° 27′ 39″.0	0″.0	−0″.05	9.99 34709
5.5	.2720212	2009	.8684678	4349	.3768589	8047	253 57 67.9	28.8	0.11	34429
6.0	.2635985	7790	.8705910	5595	.3777805	7269	254 27 97.1	57.9	0.17	34152
6.5	.2551551	3364	.8726465	6164	.3786727	6196	254 58 66.5	27.2	0.23	33878
7.0	.2466918	8740	.8746341	6054	.3795355	4829	255 28 96.2	56.8	0.28	33609
7.5	.2382092	3923	.8765536	5263	.3803687	3166	255 59 66.1	26.6	0.33	33344
8.0	.2297080	8919	.8784048	3789	.3811722	1207	256 29 96.2	56.6	0.38	33082
8.5	.2212188	3736	.8801876	1631	.3819460	8950	257 0 66.5	26.8	0.42	32824
9.0	.2126524	8379	.8819018	8788	.3826900	6396	257 30 97.1	57.3	0.45	32569
9.5	.2040994	2857	.8835473	5257	.3834041	3543	258 1 67.9	28.0	0.47	32317
10.0	.1955305	7176	.8851240	1039	.3840883	0391	258 31 98.9	58.9	0.48	32068
10.5	1869466	1345	.8866317	6131	.3847425	6939	259 2 70.0	29.9	0.48	31824
11.0	.1783484	5370	.8880703	0532	.3853668	3187	259 33 41.3	1.1	0.48	31584
11.5	.1697366	9260	.8894397	4241	.3859610	9135	260 3 72.8	32.5	0.47	31348
12.0	.1611118	3019	.8907398	7257	.3865250	4781	260 34 44.4	4.0	0.46	31117
12.5	.1524746	6654	.8919705	9579	.3870599	0126	261 4 76.1	35.6	0.44	30891
13.0	.1438259	:0174	.8931319	1208	.3875627	5170	261 35 47.9	7.3	0.41	30669
13.5	.1351665	3587	.8942237	2141	.3880363	:9912	262 5 79.9	39.2	0.37	30450
14.0	.1264970	6899	.8952458	2378	.3884796	4352	262 36 52.0	11.2	0.33	30236
14.5	.1178181	0117	.8961983	1918	.3888927	8489	263 6 84.1	43.2	0.28	30028
15.0	.1091304	3246	.8970811	0762	.3892755	2323	263 37 56.3	15.3	0.22	29824
15.5	.1004347	6295	.8978941	8907	.3896280	5854	264 7 88.6	47.5	0.16	29625
16.0	.0917315	9269	.8986372	6354	.3899502	9083	264 38 61.1	19.9	0.10	29432
16.5	.0830216	2176	.8993105	3102	.3902420	2007	265 8 93.6	52.3	−0.03	29245
17.0	.0743057	5023	.8999140	9153	.3905035	4629	265 39 66.1	24.7	+0.03	29063
17.5	.0655844	7816	.9004476	4505	.3907347	6948	266 9 98.7	57.2	0.09	28886
18.0	.0568583	:0561	.9009114	9159	.3909356	8964	266 40 71.4	29.8	0.16	28715
18.5	.0481282	3266	.9013054	3115	.3911063	0677	267 11 44.1	2.4	0.23	28551
19.0	.0393948	5937	.9016295	6373	.3912466	2087	267 41 76.9	35.1	0.29	28394
19.5	.0306585	8579	.9018838	8931	.3913566	3194	268 12 49.8	7.9	0.35	28243
20.0	.0219201	:1200	.9020682	0791	.3914363	3998	268 42 82.8	40.8	0.41	28098
20.5	.0131802	3806	.9021829	1954	.3914857	4499	269 13 55.8	13.7	0.46	27969
21.0	−.0044395	6404	.9022278	2420	.3915049	4698	269 43 88.9	46.7	0.51	27830
21.5	+.0043014	1000	.9022028	2186	.3914939	4595	270 14 62.1	19.8	0.55	27707
22.0	.0130419	:8400	.9021080	1255	.3914526	4189	270 44 95.4	53.0	0.59	27591
22.5	.0217814	5792	.9019435	9626	.3913810	3480	271 15 68.7	26.2	0.62	27482
23.0	.0305191	3165	.9017092	7300	.3912792	2469	271 45 102.1	59.5	0.65	27380
23.5	.0382544	0514	.9014051	4275	.3911471	1155	272 16 75.6	32.9	0.67	27285
24.0	.0479867	7833	.9010311	0552	.3909848	9540	272 47 49.2	6.4	0.68	27197
24.5	.0567153	5115	.9005874	6132	.3907923	7622	273 17 82.9	40.0	0.68	27116
25.0	.0654397	2356	.9000740	1015	.3905696	5403	273 48 56.6	13.6	0.68	27042
25.5	.0741593	:9548	.8994909	5201	.3903166	2880	274 18 90.5	47.5	0.67	26975
26.0	.0828733	6685	.8988379	8688	.3900334	0056	274 49 64.5	21.4	0.65	26915
26.5	.0915811	3760	.8981153	1479	.3897200	6929	275 19 98.6	55.4	0.62	26862
27.0	.1002821	0767	.8973231	3574	.3893764	3501	275 50 72.8	29.5	0.58	26816
27.5	.1089756	7699	.8964612	4972	.3890026	:9770	276 21 47.1	3.7	0.53	26776
28.0	.1176610	4551	.8955297	5675	.3885987	5739	276 51 81.4	37.9	0.48	26742
28.5	.1263375	1314	.8945286	5681	.3881646	1406	277 22 55.9	12.3	0.43	26714
29.0	.1350046	:7983	.8934580	4992	.3877004	6772	277 52 90.5	46.8	0.37	26693
29.5	.1436616	4551	.8923178	3607	.3872060	1836	278 23 65.2	21.4	0.31	26679
30.0	.1523079	1012	.8911082	1529	.3866814	6598	278 53 99.9	56.0	0.25	26670
30.5	.1609427	7358	.8898292	8756	.3861268	1060	279 24 74.8	30.8	0.19	26665
31.0	.1695654	3584	.8884809	5291	.3855421	5221	279 55 49.7	5.6	0.13	26666
31.5	.1781753	:9682	.8870632	1131	.3849273	9081	280 25 84.7	40.5	+0.07	26672
32.0	+.1867716	5644	−.8855763	6280	−.3842825	2641	280 56 59.8	15.5	0.00	26687

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

MERCURY.

1874.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x.$	$-\frac{k^2}{r^3}y.$	$-\frac{k^2}{r^3}z.$
	240								
Jan. 1	5525	–0.3494	–0.2733	+0.0082	9.6466	218° 8′.0	+3.90	+ 3.05	–0.09
6	5530	0.2780	0.3640	–0.0059	9.6605	232 53.7	2.82	3.69	+0.06
11	5535	0.1851	0.4267	0.0195	9.6678	246 57.0	1.79	4.12	0.18
16	5540	–0.0786	0.4583	0.0317	9.6686	260 44.8	+0.76	4.41	0.30
21	5545	+0.0336	0.4565	0.0416	9.6628	274 42.2	–0.33	4.57	0.41
26	5550	0.1431	0.4202	0.0483	9.6504	289 15.3	1.56	4.57	0.53
31	5555	0.2403	0.3490	0.0510	9.6314	304 54.0	2.99	4.33	0.63
Feb. 5	5560	0.3153	0.2452	0.0490	9.6058	322 14.8	4.67	3.64	0.73
10	5565	0.3543	–0.1142	0.0414	9.5744	342 2.6	6.52	+ 2.11	0.76
15	5570	0.3439	+0.0318	0.0281	9.5400	5 6.8	8.03	– 0.74	0.65
20	5575	0.2738	0.1711	–0.0101	9.5086	32 2.3	7.93	4.96	+0.29
25	5580	+0.1452	0.2729	+0.0100	9.4898	62 22.1	–4.80	9.01	–0.33
March 2	5585	–0.0185	0.3080	0.0277	9.4917	93 57.0	+0.51	10.05	0.90
7	5590	0.1780	0.2693	0.0387	9.5134	123 48.0	4.99	7.56	1.09
12	5595	0.3014	0.1738	0.0417	9.5460	150 3.2	6.76	3.91	0.93
17	5600	0.3749	+0.0485	0.0377	9.5801	172 30.4	6.63	– 0.87	0.67
22	5605	0.3981	–0.0841	0.0286	9.6106	191 49.3	5.71	+ 1.20	0.41
27	5610	0.3782	0.2080	0.0162	9.6352	208 49.6	4.57	2.52	0.20
April 1	5615	0.3237	0.3132	+0.0025	9.6530	224 14.7	3.46	3.34	–0.02
6	5620	0.2424	0.3930	–0.0115	9.6643	238 39.6	2.40	3.88	+0.11
11	5625	0.1430	0.4434	0.0247	9.6689	252 33.6	1.37	4.25	0.24
16	5630	–0.0334	0.4617	0.0366	9.6670	266 22.3	+0.33	4.49	0.35
21	5635	+0.0789	0.4459	0.0447	9.6586	280 30.9	–0.81	4.59	0.46
26	5640	0.1848	0.3952	0.0500	9.6435	295 26.7	2.11	4.51	0.57
May 1	5645	0.2751	0.3105	0.0509	9.6218	311 42.0	3.66	4.11	0.67
6	5650	0.3361	0.1947	0.0466	9.5936	329 56.6	5.42	3.14	0.75
11	5655	0.3567	–0.0559	0.0367	9.5606	350 58.3	7.24	+ 1.13	0.74
16	5660	0.3230	+0.0906	0.0212	9.5264	15 34.4	8.28	– 2.33	0.55
21	5665	0.2278	0.2189	–0.0019	9.4989	44 1.6	7.07	6.79	+0.06
26	5670	+0.0810	0.2962	+0.0178	9.4879	75 12.9	–2.70	9.91	–0.60
31	5675	–0.0858	0.3006	0.0332	9.4985	106 25.7	+2.63	9.34	1.03
June 5	5680	0.2337	0.2359	0.0409	9.5259	134 56.3	6.01	6.07	1.05
10	5685	0.3375	+0.1251	0.0408	9.5600	159 36.1	6.86	– 2.54	0.83
15	5690	0.3900	–0.0055	0.0345	9.5932	180 40.9	6.30	+ 0.08	0.56
20	5695	0.3948	0.1353	0.0239	9.6214	198 57.8	5.25	1.81	0.32
25	5700	0.3598	0.2535	+0.0108	9.6432	215 14.6	4.11	2.90	–0.12
30	5705	0.2934	0.3490	–0.0032	9.6584	230 11.4	3.02	3.59	+0.04
July 5	5710	0.2039	0.4173	0.0171	9.6669	244 20.6	1.99	4.06	0.17
10	5715	–0.0993	0.4547	0.0304	9.6689	258 9.4	+0.88	4.38	0.29
15	5720	+0.0125	0.4598	0.0400	9.6644	272 3.0	–0.12	4.55	0.40
20	5725	0.1232	0.4294	0.0473	9.6533	286 27.3	1.31	4.58	0.51
25	5730	0.2237	0.3648	0.0508	9.6355	301 51.1	2.70	4.40	0.61
30	5735	0.3036	0.2669	0.0497	9.6111	318 49.6	4.34	3.82	0.71
Aug. 4	5740	0.3503	–0.1405	0.0433	9.5807	338 6.0	6.18	+ 2.48	0.76
9	5745	0.3503	+0.0040	0.0311	9.5465	0 29.8	7.81	– 0.09	0.69
14	5750	0.2916	0.1470	–0.0138	9.5139	26 41.2	8.16	4.10	+0.39
19	5755	0.1730	0.2562	+0.0063	9.4919	56 29.4	5.63	8.40	–0.21
24	5760	+0.0113	0.3072	0.0248	9.4896	88 4.1	–0.45	10.15	0.82
29	5765	–0.1501	0.2817	0.0373	9.5082	118 26.5	+4.37	8.19	1.08
Sept. 3	5770	0.2819	0.1949	0.0417	9.5395	145 25.6	6.60	4.57	0.98
8	5775	0.3649	+0.0731	0.0389	9.5739	168 33.3	6.72	–1.34	0.72
13	5780	–0.3974	–0.0596	+0.0305	9.6053	188 23.8	+5.91	+0.88	–0.45

Note.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MERCURY.

1874.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
		240								
Sept.	18	5785	−0.3849	−0.1860	+0.0188	9.6311	205° 46′.5	+4.79	+2.32	−0.24
	23	5790	0.3360	0.2952	+0.0051	9.6502	221 26.5	3.66	3.22	−0.06
	28	5795	0.2593	0.3803	−0.0089	9.6627	236 0.4	2.61	3.80	+0.09
Oct.	3	5800	0.1627	0.4354	0.0223	9.6685	249 58.2	1.57	4.20	0.22
	8	5805	−0.0543	0.4608	0.0341	9.6679	263 45.9	+0.53	4.46	0.33
	13	5810	+0.0577	0.4516	0.0433	9.6607	277 48.8	−0.59	4.59	0.44
	18	5815	0.1658	0.4074	0.0493	9.6469	292 33.5	1.85	4.55	0.55
	23	5820	0.2592	0.3289	0.0510	9.6264	308 31.1	3.33	4.23	0.66
	28	5825	0.3272	0.2186	0.0478	9.5994	326 19.9	5.08	3.39	0.74
Nov.	2	5830	0.3567	−0.0831	0.0389	9.5670	346 46.4	6.91	+1.61	0.76
	7	5835	0.3339	+0.0637	0.0246	9.5326	10 39.4	8.21	−1.57	0.61
	12	5840	0.2502	0.1977	−0.0057	9.5031	38 25.2	7.54	5.95	+0.17
	17	5845	+0.1112	0.2869	+0.0143	9.4883	69 15.9	−3.71	9.58	−0.48
	22	5850	−0.0550	0.3056	0.0308	9.4950	100 42.8	+1.74	9.74	0.98
	27	5855	0.2088	0.2524	0.0401	9.5200	129 52.4	5.60	6.77	1.07
Dec.	2	5860	0.3220	0.1481	0.0414	9.5535	155 16.0	6.85	3.13	1.88
	7	5865	0.3840	+0.0194	0.0360	9.5872	176 57.9	6.47	−0.33	1.61
	12	5870	0.3972	−0.1124	0.0260	9.6165	195 42.4	5.47	+1.57	1.36
	17	5875	0.3690	0.2329	+0.0134	9.6396	212 18.4	4.32	2.74	−0.16
	22	5880	0.3077	0.3330	−0.0006	9.6561	227 27.6	3.22	3.48	+0.01
	27	5885	0.2220	0.4067	0.0145	9.6658	241 43.4	2.18	3.98	0.14
	32	5890	−0.1198	−0.4503	−0.0274	9.6690	255 34.1	+1.15	+4.31	+0.26

VENUS.

1874.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$
		240								
Jan.	1	5525	−0.2342	−0.6871	+0.0033	9.8608	251° 10′.3	+7.43	+21.81	−0.10
	6	5530	0.1372	0.7134	−0.0027	9.8612	259 7.2	4.34	22.58	+0.08
	11	5535	−0.0376	0.7259	0.0086	9.8615	267 3.4	+1.19	22.94	0.27
	16	5540	+0.0627	0.7246	0.0143	9.8618	274 58.9	−1.98	22.86	0.45
	21	5545	0.1620	0.7093	0.0198	9.8620	282 54.0	5.10	22.34	0.62
	26	5550	0.2578	0.6803	0.0248	9.8621	290 48.7	8.12	21.41	0.78
	31	5555	0.3490	0.6384	0.0295	9.8623	298 43.0	10.97	20.06	0.93
Feb.	5	5560	0.4334	0.5843	0.0335	9.8623	306 37.1	13.62	18.37	1.05
	10	5565	0.5095	0.5189	0.0369	9.8623	314 31.2	16.02	16.31	1.16
	15	5570	0.5759	0.4438	0.0396	9.8622	322 25.4	18.11	13.95	1.25
	20	5575	0.6314	0.3603	0.0416	9.8621	330 19.7	19.87	11.34	1.31
	25	5580	0.6747	0.2695	0.0427	9.8619	338 14.4	21.26	8.49	1.35
March	2	5585	0.7050	0.1737	0.0430	9.8617	346 9.5	22.25	5.48	1.36
	7	5590	0.7218	−0.0745	0.0425	9.8615	354 5.2	22.81	+ 2.36	1.34
	12	5595	0.7246	+0.0259	0.0412	9.8611	2 1.5	22.96	− 0.82	1.31
	17	5600	0.7137	0.1260	0.0391	9.8608	9 58.6	22.67	4.00	1.24
	22	5605	0.6889	0.2236	0.0362	9.8604	17 56.3	21.94	7.12	1.15
	27	5610	0.6507	0.3169	0.0326	9.8600	25 54.9	20.78	10.12	1.04
April	1	5615	0.5999	0.4040	0.0285	9.8596	33 54.5	19.21	12.94	0.91
	6	5620	0.5374	0.4833	0.0237	9.8592	41 55.0	17.26	15.51	0.76
	11	5625	0.4645	0.5531	0.0185	9.8588	49 56.3	14.95	17.80	0.59
	16	5630	+0.3823	+0.6120	−0.0128	9.8584	57 58.6	−12.34	−19.76	+0.41

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

VENUS.

1874.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
April	21	240 5635	+0.2927	+0.6590	−0.0070	9.8580	66° 1'.7	− 9.48	−21.34	+0.23
	26	5640	0.1973	0.6929	−0.0012	9.8576	74 5.7	6.41	22.50	+0.04
May	1	5645	+0.0982	0.7132	+0.0049	9.8573	82 10.5	− 3.19	23.20	−0.16
	6	5650	−0.0030	0.7194	0.0108	9.8570	90 16.0	+ 0.10	23.45	0.35
	11	5655	0.1042	0.7114	0.0165	9.8568	98 22.0	3.40	23.22	0.54
	16	5660	0.2032	0.6892	0.0218	9.8566	106 28.5	6.64	22.52	0.71
	21	5665	0.2982	0.6533	0.0268	9.8565	114 35.4	9.76	21.37	0.88
	26	5670	0.3874	0.6043	0.0312	9.8564	122 42.5	12.68	19.78	1.02
	31	5675	0.4686	0.5433	0.0349	9.8563	130 49.8	15.35	17.79	1.15
June	5	5680	0.5408	0.4716	0.0380	9.8564	138 57.1	17.70	15.44	1.24
	10	5685	0.6020	0.3903	0.0403	9.8565	147 4.2	19.69	12.76	1.32
	15	5690	0.6513	0.3014	0.0418	9.8566	155 11.0	21.29	9.85	1.37
	20	5695	0.6877	0.2064	0.0425	9.8568	163 17.5	22.45	6.74	1.39
	25	5700	0.7103	0.1074	0.0424	9.8571	171 23.4	23.14	3.50	1.38
	30	5705	0.7189	+0.0063	0.0414	9.8574	179 28.7	23.37	− 0.20	1.34
July	5	5710	0.7134	−0.0950	0.0395	9.8577	187 33.2	23.14	+ 3.08	1.28
	10	5715	0.6936	0.1944	0.0369	9.8581	195 37.1	22.44	6.29	1.19
	15	5720	0.6602	0.2900	0.0336	9.8585	203 40.0	21.30	9.36	1.08
	20	5725	0.6139	0.3799	0.0295	9.8589	211 42.2	19.75	12.24	0.95
	25	5730	0.5555	0.4624	0.0250	9.8593	219 43.3	17.82	14.84	0.80
	30	5735	0.4865	0.5359	0.0200	9.8597	227 43.5	15.57	17.15	0.64
Aug.	4	5740	0.4078	0.5989	0.0145	9.8601	235 42.9	13.01	19.11	0.46
	9	5745	0.3213	0.6503	0.0088	9.8605	243 41.3	10.22	20.69	0.28
	14	5750	0.2285	0.6890	+0.0029	9.8609	251 38.9	7.25	21.87	−0.09
	19	5755	0.1313	0.7145	−0.0030	9.8612	259 35.7	4.16	22.63	+0.10
	24	5760	−0.0316	0.7263	0.0089	9.8615	267 31.9	+ 1.00	22.95	0.28
	29	5765	+0.0688	0.7239	0.0147	9.8618	275 27.4	− 2.17	22.83	0.46
Sept.	3	5770	0.1678	0.7077	0.0201	9.8620	283 22.5	5.28	22.29	0.63
	8	5775	0.2635	0.6782	0.0252	9.8621	291 17.1	8.29	21.34	0.79
	13	5780	0.3542	0.6354	0.0297	9.8622	299 11.4	11.14	19.98	0.93
	18	5785	0.4382	0.5807	0.0338	9.8623	307 5.5	13.77	18.25	1.06
	23	5790	0.5138	0.5147	0.0371	9.8623	314 59.6	16.14	16.18	1.17
	28	5795	0.5797	0.4389	0.0398	9.8622	322 53.8	18.23	13.80	1.25
Oct.	3	5800	0.6344	0.3547	0.0416	9.8621	330 48.2	19.96	11.16	1.31
	8	5805	0.6769	0.2640	0.042	9.8619	338 43.0	21.33	8.32	1.35
	13	5810	0.7063	0.1678	0.0430	9.8617	346 38.2	22.29	5.30	1.36
	18	5815	0.7223	−0.0685	0.0425	9.8614	354 33.9	22.84	+ 2.17	1.34
	23	5820	0.7244	+0.0320	0.0411	9.8611	2 30.2	22.96	− 1.01	1.30
	28	5825	0.7125	0.1320	0.0389	9.8608	10 27.3	22.63	4.19	1.24
Nov.	2	5830	0.6869	0.2294	0.0360	9.8604	18 25.1	21.87	7.31	1.15
	7	5835	0.6480	0.3223	0.0324	9.8600	26 23.8	20.69	10.29	1.04
	12	5840	0.5965	0.4091	0.0282	9.8596	34 23.4	19.10	13.10	0.90
	17	5845	0.5333	0.4877	0.0234	9.8592	42 23.9	17.12	15.66	0.75
	22	5850	0.4597	0.5569	0.0181	9.8588	50 25.4	14.80	17.93	0.58
	27	5855	0.3771	0.6152	0.0125	9.8584	58 27.7	12.18	19.86	0.40
Dec.	2	5860	0.2872	0.6615	0.0066	9.8580	66 31.0	9.29	21.41	0.21
	7	5865	0.1915	0.6945	−0.0007	9.8576	74 35.0	6.22	22.55	+0.02
	12	5870	+0.0921	0.7140	+0.0053	9.8573	82 39.7	− 3.00	23.23	−0.17
	17	5875	−0.0091	0.7194	0.0111	9.8570	90 45.1	+ 0.30	23.45	0.36
	22	5880	0.1102	0.7105	0.0168	9.8568	98 51.2	3.60	23.19	0.55
	27	5885	0.2090	0.6874	0.0222	9.8566	106 57.8	6.83	22.47	0.72
	32	5890	−0.3038	+0.6507	+0.0270	9.8565	115 4.8	+ 9.94	−21.28	−0.88

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

THE EARTH.

1874.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
	5520	−0.1043	+0.9777	0.0000	9.9927	96° 5′.2	+ 1.46	−13.72	0.00
Jan. 6	5530	0.2756	0.9438		9.9927	106 16.6	3.87	13.24	
16	5540	0.4384	0.8806		9.9929	116 27.8	6.14	12.34	
26	5550	0.5878	0.7903		9.9934	126 38.0	8.20	11.04	
Feb. 5	5560	0.7188	0.6755		9.9940	136 46.7	9.99	9.39	
15	5570	0.8278	0.5397		9.9949	146 53.4	11.44	7.42	
25	5580	0.9116	0.3877		9.9959	156 57.6	12.51	5.36	
March 7	5590	0.9676	0.2238		9.9970	166 58.7	13.18	3.05	
17	5600	0.9945	+0.0531		9.9982	176 56.6	13.44	− 0.72	
27	5610	0.9915	−0.1191		9.9994	186 51.2	13.28	+ 1.60	
April 6	5620	0.9592	0.2878		0.0006	196 42.5	12.74	3.83	
16	5630	0.8987	0.4481		0.0018	206 30.4	11.84	5.91	
26	5640	0.8121	0.5954		0.0030	216 15.1	10.61	7.78	
May 6	5650	0.7020	0.7255		0.0041	225 56.7	9.11	9.41	
16	5660	0.5717	0.8347		0.0050	235 35.5	7.37	10.76	
26	5670	0.4251	0.9201		0.0058	245 12.0	5.45	11.80	
June 5	5680	0.2665	0.9795		0.0065	254 46.7	3.40	12.50	
15	5690	−0.1003	1.0112		0.0069	264 20.1	+ 1.28	12.86	
25	5700	+0.0687	1.0144		0.0072	273 52.5	− 0.87	12.88	
July 5	5710	0.2358	0.9891		0.0072	283 24.5	2.99	12.55	
15	5720	0.3963	0.9360		0.0071	292 56.6	5.04	11.89	
25	5730	0.5455	0.8566		0.0067	302 29.4	6.95	10.91	
Aug. 4	5740	0.6794	0.7530		0.0061	312 3.4	8.68	9.63	
14	5750	0.7941	0.6282		0.0054	321 39.2	10.20	8.07	
24	5760	0.8862	0.4855		0.0045	331 17.2	11.46	6.27	
Sept. 3	5770	0.9530	0.3289		0.0035	340 57.7	12.41	4.28	
13	5780	0.9922	−0.1628		0.0024	350 41.0	13.02	+ 2.14	
23	5790	1.0026	+0.0080		0.0012	0 27.5	13.27	− 0.11	
Oct. 3	5800	0.9838	0.1786		9.9999	10 17.3	13.14	2.39	
13	5810	0.9358	0.3439		9.9987	20 10.5	12.61	4.63	
23	5820	0.8598	0.4989		9.9974	30 7.0	11.69	6.77	
Nov. 2	5830	0.7582	0.6389		0.9963	40 6.8	10.38	8.74	
12	5840	0.6337	0.7596		9.9953	50 9.7	8.73	10.47	
22	5850	0.4898	0.8571		9.9944	60 15.3	6.79	11.89	
Dec. 2	5860	0.3308	0.9283		9.9936	70 23.2	4.61	12.94	
12	5870	+0.1616	0.9710		9.9931	80 32.9	− 2.26	13.59	
22	5880	−0.0123	0.9834		9.9928	90 43.7	+ 0.18	13.79	
32	5890	−0.1863	+0.9656	0.0000	9.9927	100 55.1	+ 2.62	−13.55	0.00

MARS.

1874.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
	5520	+1.3928	−0.0107	−0.0340	0.1440	359° 32′.8	−0.91	+0.01	+0.02
Jan. 6	5530	1.3921	+0.1408	0.0307	0.1460	5 45.6	0.90	−0.09	0.02
16	5540	1.3765	0.2907	0.0271	0.1483	11 54.7	0.87	0.18	0.02
26	5550	1.3462	0.4375	0.0232	0.1510	17 59.6	0.84	0.27	0.01
Feb. 5	5560	1.3019	0.5798	0.0191	0.1539	23 59.8	0.79	0.35	0.01
15	5570	1.2443	0.7162	0.0148	0.1571	29 55.0	0.74	0.43	0.01
25	5580	1.1743	0.8454	0.0104	0.1605	35 44.8	0.68	0.49	0.01
March 7	5590	+1.0928	+0.9664	−0.0058	0.1640	41 29.1	−0.62	−0.55	+0.00

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MARS.

1874.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
		240								
March	17	5600	+1.0009	+1.0782	–0.0012	0.1677	47° 7′.8	–0.56	–0.60	0.00
	27	5610	0.8997	1.1800	+0.0034	0.1714	52 40.7	0.49	0.64	0.00
April	6	5620	0.7903	1.2711	0.0080	0.1752	58 7.9	0.42	0.67	0.00
	16	5630	0.6740	1.3510	0.0126	0.1789	63 29.5	0.35	0.69	–0.01
	26	5640	0.5519	1.4193	0.0170	0.1827	68 45.6	0.28	0.71	0.01
May	6	5650	0.4251	1.4757	0.0213	0.1863	73 56.3	0.21	0.72	0.01
	16	5660	0.2949	1.5200	0.0254	0.1899	79 1.9	0.14	0.72	0.01
	26	5670	0.1624	1.5523	0.0293	0.1934	84 2.6	0.08	0.72	0.01
June	5	5680	+0.0285	1.5725	0.0329	0.1967	88 58.5	–0.01	0.71	0.01
	15	5690	–0.1055	1.5807	0.0364	0.1999	93 50.0	+0.05	0.70	0.02
	25	5700	0.2388	1.5772	0.0395	0.2029	98 37.4	0.10	0.69	0.02
July	5	5710	0.3703	1.5622	0.0424	0.2058	103 21.0	0.16	0.67	0.02
	15	5720	0.4992	1.5360	0.0449	0.2084	108 1.1	0.21	0.64	0.02
	25	5730	0.6246	1.4991	0.0472	0.2108	112 37.9	0.26	0.62	0.02
Aug.	4	5740	0.7457	1.4519	0.0491	0.2130	117 11.8	0.30	0.59	0.02
	14	5750	0.8618	1.3947	0.0507	0.2149	121 43.1	0.34	0.56	0.02
	24	5760	0.9720	1.3283	0.0519	0.2166	126 12.1	0.38	0.53	0.02
Sept.	3	5770	1.0758	1.2530	0.0528	0.2181	130 39.2	0.42	0.49	0.02
	13	5780	1.1726	1.1695	0.0534	0.2193	135 4.7	0.46	0.45	0.02
	23	5790	1.2617	1.0784	0.0536	0.2203	139 28.8	0.49	0.42	0.02
Oct.	3	5800	1.3427	0.9803	0.0535	0.2210	143 51.8	0.52	0.38	0.02
	13	5810	1.4151	0.8760	0.0530	0.2214	148 14.2	0.54	0.33	0.02
	23	5820	1.4784	0.7660	0.0522	0.2216	152 36.2	0.57	0.29	0.02
Nov.	2	5830	1.5322	0.6511	0.0510	0.2216	156 58.1	0.59	0.25	0.02
	12	5840	1.5763	0.5321	0.0496	0.2213	161 20.2	0.60	0.20	0.02
	22	5850	1.6102	0.4096	0.0478	0.2207	165 42.9	0.62	0.16	0.02
Dec.	2	5860	1.6337	0.2845	0.0456	0.2198	170 6.5	0.63	0.11	0.02
	12	5870	1.6467	0.1576	0.0432	0.2187	174 31.2	0.64	0.06	0.02
	22	5880	1.6489	+0.0296	0.0406	0.2174	178 57.4	0.65	–0.01	0.02
	32	5890	–1.6403	–0.0986	+0.0376	0.2158	183 25.5	+0.65	+0.04	–0.01

JUPITER.

1874.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
		240								
		5520	–5.36259	+0.87018	+0.11802	0.73512	170° 47′ 15″	+151.00	–24.50	–3.32
Jan.	6	5530	5.37504	0.79912	0.11856	0.73523	171 32 53	151.23	22.48	3.34
	16	5540	5.38651	0.72790	0.11907	0.73534	172 18 29	151.44	20.46	3.35
	26	5550	5.39698	0.65655	0.11957	0.73545	173 4 4	151.63	18.45	3.36
Feb.	5	5560	5.40646	0.58508	0.12004	0.73555	173 49 38	151.79	16.43	3.37
	15	5570	5.41494	0.51351	0.12049	0.73564	174 35 11	151.93	14.41	3.38
	25	5580	5.42242	0.44185	0.12092	0.73574	175 20 42	152.04	12.39	3.39
March	7	5590	5.42891	0.37010	0.12132	0.73583	176 6 12	152.13	10.37	3.40
	17	5600	5.43440	0.29828	0.12170	0.73591	176 51 41	152.19	8.35	3.41
	27	5610	5.43889	0.22641	0.12207	0.73599	177 37 9	152.23	6.34	3.42
April	6	5620	5.44239	0.15449	0.12241	0.73607	178 22 36	152.24	4.32	3.42
	16	5630	5.44489	0.08255	0.12273	0.73615	179 8 2	152.23	2.31	3.43
	26	5640	5.44639	+0.01059	0.12302	0.73622	179 53 28	152.20	– 0.30	3.44
May	6	5650	5.44690	–0.06137	0.12329	0.73629	180 38 52	152.14	+ 1.71	3.44
	16	5660	–5.44641	–0.13332	+0.12354	0.73635	181 24 15	+152.06	+ 3.72	–3·45

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

JUPITER.

1874.	Julian Day.	$x.$	$y.$	$z.$	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x.$	$-\frac{\kappa^2}{r^3}y.$	$-\frac{\kappa^2}{r^3}z.$
May 26	240 5670	−5.44493	−0.20524	+0.12377	0.73641	182° 9′ 38″	+151.96	+ 5.73	−3.45
June 5	5680	5.44245	0.27713	0.12397	0.73647	182 55 0	151.83	7.73	3.46
15	5690	5.43897	0.34896	0.12415	0.73652	183 40 21	151.68	9.73	3.46
25	5700	5.43449	0.42073	0.12431	0.73657	184 25 41	151.50	11.73	3.47
July 5	5710	5.42902	0.49243	0.12444	0.73661	185 11 1	151.30	13.72	3.47
15	5720	5.42256	0.56403	0.12455	0.73665	185 56 21	151.08	15.71	3.47
25	5730	5.41512	0.63553	0.12464	0.73669	186 41 40	150.83	17.70	3.47
Aug. 4	5740	5.40669	0.70692	0.12471	0.73673	187 26 58	150.56	19.69	3.47
14	5750	5.39727	0.77818	0.12476	0.73676	188 12 16	150.27	21.67	3.47
24	5760	5.38687	0.84929	0.12478	0.73678	188 57 34	149.96	23.64	3.47
Sept. 3	5770	5.37548	0.92025	0.12478	0.73680	189 40 52	149.62	25.62	3.47
13	5780	5.36311	0.99104	0.12476	0.73682	190 28 9	149.26	27.58	3.47
23	5790	5.34976	1.06165	0.12471	0.73684	191 13 26	148.87	29.54	3.47
Oct. 3	5800	5.33544	1.13207	0.12464	0.73685	191 58 43	148.46	31.50	3.47
13	5810	5.32015	1.20229	0.12455	0.73685	192 44 0	148.03	33.45	3.46
23	5820	5.30389	1.27228	0.12444	0.73686	193 29 17	147.57	35.40	3.46
Nov. 2	5830	5.28666	1.34204	0.12430	0.73685	194 14 33	147.09	37.34	3.46
12	5840	5.26846	1.41156	0.12414	0.73685	194 59 50	146.59	39.28	3.45
22	5850	5.24930	1.48082	0.12396	0.73684	195 45 7	146.07	41.21	3.45
Dec. 2	5860	5.22919	1.54981	0.12375	0.73683	196 30 24	145.52	43.13	3.44
12	5870	5.20812	1.61851	0.12352	0.73681	197 15 41	144.95	45.05	3.44
22	5880	5.18610	1.68692	0.12327	0.73679	198 0 59	144.36	46.96	3.43
32	5890	−5.16313	−1.75503	+0.12300	0.73677	198 46 16	+143.74	+48.86	−3.42

SATURN.

1874.	Julian Day.	$x.$	$y.$	$z.$	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x.$	$-\frac{\kappa^2}{r^3}y.$	$-\frac{\kappa^2}{r^3}z.$
	240 5520	+5.60448	−8.23823	−0.08751	0.99844	304° 14′ 18″	−7.66	+11.26	+0.12
Jan. 6	5530	5.64747	8.20686	0.08976	0.99837	304 32 40	7.72	11.22	0.12
16	5540	5.69029	8.17524	0.09201	0.99830	304 51 2	7.79	11.19	0.13
26	5550	5.73295	8.14337	0.09425	0.99823	305 9 25	7.85	11.15	0.13
Feb. 5	5560	5.77544	8.11125	0.09649	0.99816	305 27 48	7.91	11.11	0.13
15	5570	5.81775	8.07889	0.09872	0.99809	305 46 12	7.97	11.07	0.14
25	5580	5.85989	8.04629	0.10096	0.99802	306 4 37	8.04	11.03	0.14
March 7	5590	5.90186	8.01344	0.10319	0.99794	306 23 2	8.10	10.99	0.14
17	5600	5.94365	7.98036	0.10542	0.99787	306 41 27	8.16	10.95	0.14
27	5610	5.98527	7.94704	0.10765	0.99780	306 59 53	8.22	10.91	0.15
April 6	5620	6.02671	7.91349	0.10987	0.99773	307 18 19	8.28	10.87	0.15
16	5630	6.06796	7.87969	0.11209	0.99765	307 36 45	8.34	10.83	0.15
26	5640	6.10903	7.84565	0.11431	0.99757	307 55 12	8.40	10.79	0.16
May 6	5650	6.14992	7.81138	0.11652	0.99749	308 13 39	8.46	10.74	0.16
16	5660	6.19062	7.77687	0.11873	0.99742	308 32 7	8.52	10.70	0.16
26	5670	6.23114	7.74213	0.12094	0.99734	308 50 35	8.58	10.66	0.17
June 5	5680	6.27147	7.70715	0.12314	0.99726	309 9 3	8.64	10.62	0.17
15	5690	6.31161	7.67194	0.12534	0.99718	309 27 32	8.70	10.58	0.17
25	5700	6.35156	7.63649	0.12753	0.99710	309 46 1	8.76	10.54	0.18
July 5	5710	6.39132	7.60081	0.12972	0.99702	310 4 30	8.82	10.49	0.18
15	5720	6.43089	7.56490	0.13190	0.99694	310 23 0	8.88	10.45	0.18
25	5730	+6.47026	−7.52876	−0.13408	0.99686	310 41 31	−8.94	+10.40	+0.19

Note.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

SATURN.

1874.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240								
Aug. 4	5740	+6.50943	-7.49240	-0.13626	0.99678	311° 0′ 2″	-9.00	+10.35	+0.19
14	5750	6.54841	7.45581	0.13844	0.99670	311 18 33	9.06	10.31	0.19
24	5760	6.58719	7.41899	0.14061	0.99662	311 37 5	9.12	10.26	0.19
Sept. 3	5770	6.62578	7.38195	0.14278	0.99653	311 55 37	9.17	10.22	0.20
13	5780	6.66417	7.34469	0.14494	0.99645	312 14 10	9.23	10.18	0.20
23	5790	6.70235	7.30720	0.14710	0.99636	312 32 43	9.29	10.13	0.20
Oct. 3	5800	6.74033	7.26949	0.14925	0.99628	312 51 17	9.35	10.09	0.21
13	5810	6.77811	7.23155	0.15140	0.99619	313 9 51	9.41	10.04	0.21
23	5820	6.81568	7.19339	0.15354	0.99611	313 28 25	9.47	9.99	0.21
Nov. 2	5830	6.85304	7.15501	0.15568	0.99602	313 47 0	9.52	9.94	0.22
12	5840	6.89019	7.11641	0.15781	0.99593	314 5 35	9.58	9.90	0.22
22	5850	6.92714	7.07760	0.15994	0.99584	314 24 11	9.64	9.85	0.22
Dec. 2	5860	6.96388	7.03857	0.16207	0.99575	314 42 47	9.70	9.80	0.22
12	5870	7.00040	6.99933	0.16419	0.99566	315 1 24	9.75	9.75	0.23
22	5880	7.03671	6.95987	0.16630	0.99557	315 20 2	9.81	9.70	0.23
32	5890	+7.07281	-6.92020	-0.16841	0.99548	315 38 40	-9.86	+9.65	+0.23

URANUS.

1874.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240								
	5520	-11.40594	+14.55234	+0.20462	1.26695	128° 5′ 29″	+0.34	-0.44	-0.01
Feb. 5	5560	11.53087	14.44718	0.20581	1.26684	128 35 50	0.35	0.44	0.01
Mar. 17	5600	11.65493	14.34095	0.20702	1.26672	129 6 12	0.35	0.43	0.01
Apr. 26	5640	11.77810	14.23367	0.20820	1.26661	129 36 35	0.36	0.43	0.01
June 5	5680	11.90036	14.12527	0.20936	1.26649	130 6 58	0.36	0.43	0.01
July 15	5720	12.02170	14.01577	0.21049	1.26638	130 37 23	0.36	0.42	0.01
Aug. 24	5760	12.14210	13.90522	0.21162	1.26627	131 7 48	0.37	0.42	0.01
Oct. 3	5800	12.26160	13.79368	0.21273	1.26616	131 38 14	0.37	0.42	0.01
Nov. 12	5840	12.38015	13.68107	0.21383	1.26605	132 8 41	0.38	0.41	0.01
Dec. 22	5880	-12.49773	+13.56744	+0.21490	1.26594	132 39 8	+0.38	-0.41	-0.01

NEPTUNE.

1874.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240								
	5520	+26.4267	+13.7864	-0.9041	1.47451	27° 33′.4	-0.25	-0.13	+0.01
Feb. 5	5560	26.3676	13.8981	0.9050	1.47451	27 48.0	0.25	0.13	0.01
Mar. 17	5600	26.3081	14.0096	0.9058	1.47450	28 2.5	0.25	0.13	0.01
Apr. 26	5640	26.2481	14.1209	0.9067	1.47450	28 17.1	0.25	0.13	0.01
June 5	5680	26.1876	14.2319	0.9075	1.47449	28 31.7	0.25	0.14	0.01
July 15	5720	26.1267	14.3426	0.9083	1.47449	28 46.2	0.25	0.14	0.01
Aug. 24	5760	26.0654	14.4530	0.9090	1.47448	29 0.8	0.25	0.14	0.01
Oct. 3	5800	26.0036	14.5632	0.9098	1.47448	29 15.4	0.25	0.14	0.01
Nov. 12	5840	25.9413	14.6732	0.9105	1.47447	29 29.9	0.25	0.14	0.01
Dec. 22	5880	+25.8786	+14.7829	-0.9113	1.47447	29 44.5	-0.25	-0.14	+0.01

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

INCLINATIONS AND NODES.

Planet.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Increase in 100 Days.
	° ′ ″	″	° ′ ″	″
Mercury . . .	7 0 9.8	+0.01947	46 49 3	+11.643
Venus	3 23 35.4	+0.01195	75 33 5	9.004
Mars	1 51 1.8	—0.00586	48 34 2	7.585
Jupiter	1 18 35.1	—0.06189	99 7 16	9.402
Saturn	2 29 19.2	—0.03824	112 30 56	8.425
Uranus	0 46 30.2	+0.00835	73 20 59	4.898
Neptune . . .	1 46 54.3	—0.09020	130 22 29	+10.885

Note.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MASSES. Sun's=1.

Planet.	Mass.	Log. of Mass.	Authority.
Mercury . .	$\frac{1}{4865751}$ =.000 000 206	93.31285	Encke, *A. N.*, No. 443.
Venus . . .	$\frac{1}{390000}$ =.000 002 564	94.40893	Le Verrier, *Théor. de Merc.*, p. 115.
The Earth .	$\frac{1}{354936}$ =.000 002 817	94.44985	Le Verrier, *Théor. de Merc.*, p. 26.
Mars . . .	$\frac{1}{2680637}$ =.000 000 373	93.57176	Burckhardt, *Conn. des Temps.*, 1816, p. 343.
Jupiter . .	$\frac{1}{1047.879\pm.235}$ =.000 954 308	96.979689	Bessel, *Die Masse des Jupiter*, p. 64.
Saturn . . .	$\frac{1}{3501.6}$ =.000 285 584	96.455733	Bessel, *Comptes Rendus*, 1841.
Uranus . .	$\frac{1}{24905}$ =.000 040 153	95.60371	Lamont, *Mem. Ast. Soc.*, Vol. XI. p. 54.
Neptune . .	$\frac{1}{18780}$ =.000 053 248	95.72630	Peirce, *Am. Ac. Proc.*, Vol. I. p. 333.

ECLIPSES IN 1874.

In the year 1874 there will be four Eclipses, two of the Sun, and two of the Moon; and a Transit of Venus over the Sun's disc.

I. A Total Eclipse of the Sun, April 15, 1874, invisible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, April 15^d 20^h 9^m $20^s.3$.

	h m s		s s
Sun and Moon's R. A.	1 37 48.02	Hourly Motions	9.26 and 137.80
	° ′ ″		′ ″
Sun's Declination	+10 10 55.5	Hourly Motion	+ 0 53.1
Moon's Declination	+ 9 14 40.8	" "	+16 55.3
Sun's Equa. Hor. Par.	8.8	True Semidiameter	15 55.7
Moon's Equa. Hor. Par.	61 13.5	" "	16 40.2

From these elements may be deduced the following results:—

Eclipse begins on the Earth April 15^d 18^h $40^m.7$, Washington mean time, in longitude 6° 52′.6 East from Washington, and in latitude 58° 33′.4 South.

Central Eclipse begins on the Earth 19^h $57^m.0$, in longitude 29° 30′.5 East from Washington, and in latitude 78° 8′.7 South.

Central Eclipse at Noon 20^h $9^m.3$, in longitude 57° 36′.2 East from Washington, and in latitude 59° 52′.9 South.

Central Eclipse ends on the Earth 21^h $49^m.3$, in longitude 116° 43′.3 East from Washington, and in latitude 29° 40′.1 South.

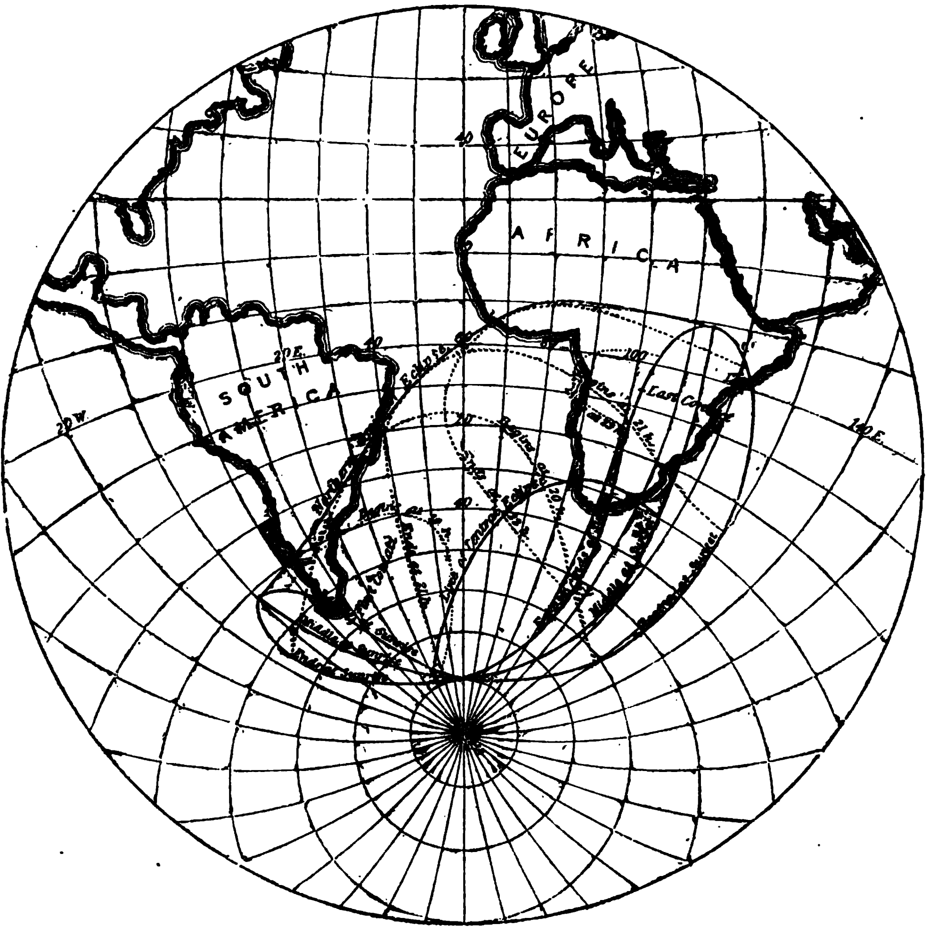
Eclipse ends on the Earth 23^h $5^m.6$, in longitude 102° 24′.7 East from Washington, and in latitude 6° 13′.5 South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log. E.	log. F.	log. G.	log. H.	μ
h m				9.99	9.99	+9.23	+9.25	° ′ ″
18 30	−0.85991	−0.83817	−1.90549	3497	2772	5102	7674	277 33 21.8
18 40	0.77335	0.79441	1.86175	3494	2768	5204	7771	280 3 24.1
18 50	0.68678	0.75065	1.81802	3491	2765	5307	7868	282 33 26.3
19 0	0.60021	0.70689	1.77428	3487	2762	5409	7964	285 3 29.6
19 10	0.51364	0.66313	1.73054	3484	2759	5511	8061	287 33 31.9
19 20	0.42708	0.61937	1.68680	3481	2755	5613	8158	290 3 34.1
19 30	0.34051	0.57562	1.64307	3478	2752	5715	8255	292 33 36.4
19 40	0.25395	0.53186	1.59933	3475	2749	5818	8351	295 3 38.7
19 50	0.16739	0.48811	1.55559	3472	2745	5920	8448	297 33 40.9
20 0	−0.08082	0.44436	1.51185	3469	2742	6022	8545	300 3 43.3
20 10	+0.00574	0.40061	1.46811	3466	2739	6124	8642	302 33 45.6
20 20	0.09229	0.35686	1.42438	3463	2736	6226	8738	305 3 47.8
20 30	0.17885	0.31311	1.38064	3460	2732	6328	8835	307 33 50.1
20 40	0.26540	0.26937	1.33691	3456	2729	6430	8932	310 3 52.4
20 50	0.35195	0.22563	1.29317	3453	2726	6532	9028	312 33 54.6
21 0	0.43850	0.18189	1.24944	3450	2723	6634	9125	315 3 56.9
21 10	0.52505	0.13816	1.20571	3447	2719	6736	9221	317 33 59.2
21 20	0.61159	0.09442	1.16197	3444	2716	6838	9318	320 4 1.4
21 30	0.69813	0.05070	1.11825	3441	2713	6939	9414	322 34 3.7
21 40	0.78467	−0.00697	1.07452	3437	2709	7041	9511	325 4 6.0
21 50	0.87120	+0.03675	1.03079	3434	2706	7143	9607	327 34 8.2
22 0	0.95773	0.08047	0.98707	3431	2703	7245	9704	330 4 10.5
22 10	1.04425	0.12418	0.94335	3428	2699	7347	9800	332 34 12.8
22 20	1.13077	0.16789	0.89963	3425	2696	7448	9897	335 4 15.0
22 30	1.21729	0.21160	0.85591	3421	2693	7550	9993	337 34 17.3
22 40	1.30380	0.25530	0.81220	3418	2689	7652	◆0089	340 4 19.6
22 50	1.39031	0.29900	0.76849	3415	2686	7753	0186	342 34 21.9
23 0	1.47681	0.34269	0.72478	3412	2683	7855	0282	345 4 24.2
23 10	+1.56330	+0.38638	−0.68108	3409	2680	7956	0378	347 34 26.5

◆ The first figures of this and the following logarithms are 9.26.

OUTLINES AND PATH OF THE PENUMBRA AND THE CENTRAL LINE OF THE TOTAL ECLIPSE OF APRIL 15, 1874.



FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
19 50	−1.03402	−1.00968	20 50	−0.77155	−0.74726
20 0	0.99027	0.96594	21 0	0.72781	0.70352
20 10	0.94652	0.92220	21 10	0.68408	0.65979
20 20	0.90278	0.87847	21 20	0.64035	0.61606
20 30	0.85903	0.83473	21 30	0.59662	0.57233
20 40	0.81529	0.79100	21 40	0.55290	0.52860
20 50	−0.77155	−0.74726	21 50	−0.50917	−0.48488

A and μ are the same as for Penumbra, and the values of log. E, log. F, log. G, and log. H may be obtained from the corresponding values for Penumbra, by numerically decreasing log. E and increasing log. F by 0.000002, and by numerically increasing log. G by 0.000058 and decreasing log. H by 0.000055.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
18 30	+8656.8	+4376.2	+4373.7	+144.28	+72.94	+72.89
19 0	8656.7	4375.9	4373.7	144.28	72.93	72.89
19 30	8656.5	4375.6	4373.8	144.27	72.93	72.90
20 0	8656.1	4375.1	4373.8	144.27	72.92	72.90
20 30	8655.5	4374.4	4373.6	144.26	72.91	72.89
21 0	8654.7	4373.6	4373.3	144.24	72.89	72.89
21 30	8653.7	4372.6	4372.8	144.23	72.88	72.88
22 0	8652.7	4371.5	4372.2	144.21	72.86	72.87
22 30	8651.4	4370.4	4371.5	144.19	72.84	72.86
23 0	8649.9	4369.2	4370.5	144.16	72.82	72.84
23 30	+8648.3	+4367.9	+4369.3	+144.14	+72.80	+72.82

II. A Partial Eclipse of the Moon, April 30–31, 1874, invisible at Washington, with the following elements:

Washington mean time of ☍ in Right Ascension, April 30^d 23^h 23^m 14^s.5.

	h m s		s
Sun's Right Ascension	2 34 39.01	Hourly Motion	9.54
Moon's Right Ascension	14 34 39.01	" "	115.03
	° ′ ″		′ ″
Sun's Declination	+15 10 4.5	Hourly Motion	+ 0 45.2
Moon's Declination	−15 42 22.6	" "	−11 58.8
Sun's Equa. Hor. Par.	8.8	True Semidiameter	15 52.0
Moon's Equa. Hor. Par.	54 28.0	" "	14 49.8

From these elements may be deduced the following results:—

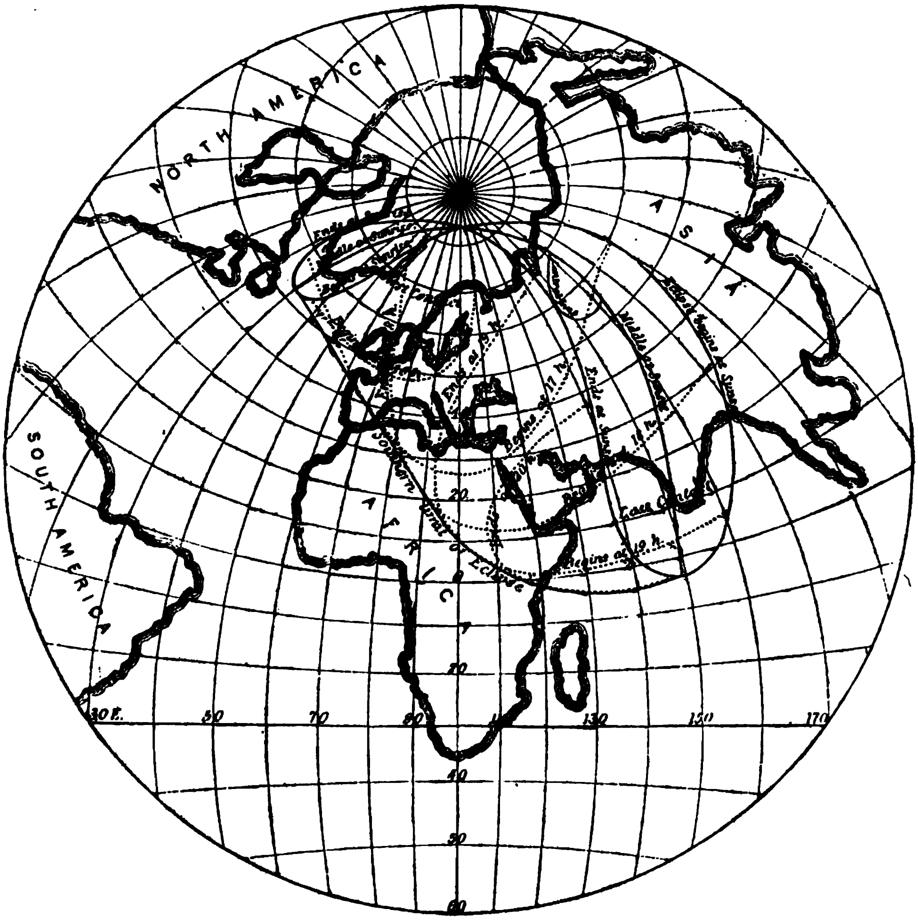
	d h m	
Moon enters Penumbra, April	30 20 0.4	Washington mean time.
Moon enters Shadow	30 21 16.2	" "
Middle of Eclipse	30 22 54.9	" "
Moon leaves Shadow	31 0 33.3	" "
Moon leaves Penumbra	31 1 49.5	" "

First contact of Shadow with Moon's limb 81° from north point towards the East, when the Moon is in the zenith, in longitude 140° 50′ West from Washington, and in latitude 15° 17′ South.

Last contact of Shadow with Moon's limb 33° from north point towards the West, when the Moon is in the zenith, in longitude 171° 25′ East from Washington, and in latitude 15° 56′ South.

Magnitude of the Eclipse = 0.833 (Moon's diameter = 1).

OUTLINES AND PATH OF THE PENUMBRA AND THE CENTRAL LINE OF THE ANNULAR ECLIPSE OF OCTOBER 9, 1874.



III. An Annular Eclipse of the Sun, October 9, 1874, invisible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, October 9ᵈ 17ʰ 1ᵐ 59ˢ.5.

	h m s		s s
Sun and Moon's R. A.	13 2 25.95	Hourly Motions	9.21 and 105.46
Sun's Declination	−6° 39′ 33″.7	Hourly Motion	− 0′ 56″.9
Moon's Declination	−5 39 6.4	" "	−13 48.3
Sun's Equa. Hor. Par.	8.9	True Semidiameter	16 1.8
Moon's Equa. Hor. Par.	53 59.9	" "	14 42.2

From these elements may be deduced the following results:

Eclipse begins on the Earth October 9ᵈ 15ʰ 40ᵐ.5, Washington mean time, in longitude 47° 13′.5 East from Washington, and in latitude 66° 33′.7 North.

Central Eclipse begins on the Earth 17ʰ 50ᵐ.2, in longitude 162° 15′.8 East from Washington, and in latitude 68° 7′.2 North.

Central Eclipse ends on the Earth 18ʰ 20ᵐ.6, in longitude 162° 25′.6 East from Washington, and in latitude 53° 54′.7 North.

Eclipse ends on the Earth 20ʰ 30ᵐ.1, in longitude 137° 55′.9 East from Washington, and in latitude 10° 49′.1 North.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.99	9.99	−9.08	−9.04	° ′ ″
15 30	−0.68183	+2.05907	+0.91789	6841	7315	0140	5141	235 43 50.7
15 40	0.60772	2.01931	0.87811	6839	7312	0299	5313	238 13 53.0
15 50	0.53362	1.97955	0.83833	6836	7310	0458	5485	240 43 55.3
16 0	0.45951	1.93979	0.79855	6834	7308	0616	5657	243 13 57.6
16 10	0.38540	1.90003	0.75877	6832	7306	0775	5829	245 43 59.9
16 20	0.31129	1.86026	0.71900	6829	7304	0933	6001	248 14 2.2
16 30	0.23717	1.82050	0.67922	6827	7301	1092	6173	250 44 4.4
16 40	0.16305	1.78073	0.63945	6825	7299	1250	6345	253 14 6.7
16 50	0.08893	1.74098	0.59968	6822	7297	1409	6516	255 44 9.0
17 0	−0.01480	1.70122	0.55990	6820	7295	1567	6688	258 14 11.3
17 10	+0.05932	1.66145	0.52013	6818	7293	1725	6859	260 44 13.6
17 20	0.13345	1.62170	0.48036	6815	7291	1884	7031	263 14 15.9
17 30	0.20757	1.58194	0.44058	6813	7288	2042	7202	265 44 18.1
17 40	0.28170	1.54217	0.40081	6811	7286	2200	7373	268 14 20.4
17 50	0.35582	1.50242	0.36004	6808	7284	2358	7545	270 44 22.7
18 0	0.42995	1.46266	0.32126	6806	7282	2516	7716	273 14 25.1
18 10	0.50408	1.42289	0.28149	6804	7280	2674	7887	275 44 27.4
18 20	0.57820	1.38314	0.24172	6801	7278	2832	8059	278 14 29.7
18 30	0.65233	1.34337	0.20195	6799	7276	2989	8230	280 44 32.0
18 40	0.72645	1.30360	0.16218	6797	7274	3147	8401	283 14 34.2
18 50	0.80057	1.26385	0.12241	6794	7272	3304	8572	285 44 36.5
19 0	0.87469	1.22408	0.08264	6792	7270	3462	8743	288 14 38.8
19 10	0.94881	1.18431	0.04287	6790	7268	3619	8914	290 44 41.1
19 20	1.02293	1.14455	+0.00311	6787	7266	3777	9085	293 14 43.3
19 30	1.09704	1.10478	−0.03666	6785	7263	3934	9256	295 44 45.6
19 40	1.17116	1.06502	0.07644	6783	7261	4091	9427	298 14 47.9
19 50	1.24527	1.02526	0.11620	6780	7259	4249	9597	300 44 50.1
20 0	1.31938	0.98549	0.15597	6778	7257	4406	9768	303 14 52.4
20 10	1.39349	0.94572	0.19574	6776	7255	4563	9938	305 44 54.7
20 20	1.46759	0.90595	0.23551	6773	7253	4720	◆0109	308 14 57.0
20 30	1.54169	0.86618	0.27528	6771	7251	4877	0279	310 44 59.3
20 40	+1.61579	+0.82641	−0.31505	6769	7248	5034	0449	313 15 1.5

◆ The first figures of this and the following logarithms are 9.05.

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
17 50	+0.95632	+0.90714	18 10	+0.87679	+0.82759
18 0	0.91656	0.86736	18 20	0.83704	0.78782
18 10	+0.87679	+0.82759	18 30	+0.79727	+0.74805

A and μ are the same as for Penumbra, and the values of log. E, log. F, log. G, and log. H may be obtained from the corresponding values for Penumbra, by numerically increasing log. E and decreasing log. F by 0.000001, and by numerically decreasing log. G by 0.000083 and increasing log. H by 0.000091.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
15 30	+7410.3	−3976.0	−3978.3	+123.50	−66.27	−66.30
16 0	7411.1	3976.1	3978.0	123.52	66.27	66.30
16 30	7411.8	3976.1	3977.7	123.53	66.27	66.29
17 0	7412.3	3976.2	3977.5	123.54	66.27	66.29
17 30	7412.5	3976.2	3977.3	123.54	66.27	66.29
18 0	7412.5	3976.3	3977.2	123.54	66.27	66.29
18 30	7412.3	3976.3	3977.0	123.54	66.27	66.28
19 0	7412.0	3976.4	3976.9	123.53	66.27	66.28
19 30	7411.5	3976.5	3976.8	123.52	66.27	66.28
20 0	7410.8	3976.7	3976.9	123.51	66.28	66.28
20 30	+7409.8	−3977.0	−3977.0	+123.50	−66.28	−66.28

IV. A Total Eclipse of the Moon, October 24, 1874, visible at Washington, with the following elements:

Washington mean time of ☍ in Right Ascension, October 24ᵈ 14ʰ 30ᵐ 45ˢ.7.

	h m s		s
Sun's Right Ascension	13 58 17.64	Hourly Motion	9.57
Moon's Right Ascension	1 58 17.64	" "	141.56
	° ′ ″		′ ″
Sun's Declination	−12 5 17.3	Hourly Motion	− 0 51.8
Moon's Declination	+12 36 6.4	" "	+16 29.6
Sun's Equa. Hor. Par.	8.9	True Semidiameter	16 5.9
Moon's Equa. Hor. Par.	61 27.0	" "	16 43.9

From these elements may be deduced the following results:

	d h m	
Moon enters Penumbra, October	24 11 35.8	Washington mean time.
Moon enters Shadow	24 12 33.7	" "
Total Phase begins	24 13 51.7	" "
Middle of the Eclipse	24 14 8.6	" "
Total Phase ends	24 14 25.4	" "
Moon leaves Shadow	24 15 43.5	" "
Moon leaves Penumbra	24 16 41.3	" "

First contact of Shadow with Moon's limb 90° from north point towards the East, when the Moon is in the zenith, in longitude 13° 27′ West from Washington, and in latitude 12° 4′ North.

Last contact of Shadow with Moon's limb 140° from north point towards the West, when the Moon is in the zenith, in longitude 59° 0′ West from Washington, and in latitude 12° 56′ North.

Magnitude of the Eclipse = 1.053 (Moon's diameter = 1).

V. A Transit of Venus over the Sun's disc, December 8, 1874, invisible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, December $8^{d}\ 11^{h}\ 52^{m}\ 10^{s}$.

Sun and Venus's R. A.	$17^{h}\ 3^{m}\ 31^{s}.627$	Hourly motions	$+10^{s}.980$ and $-6^{s}.267$
Sun's Declination	$-22^{\circ}\ 49'\ 22''.08$	Hourly Motion	$-\ 0'\ 14''.85$
Venus' Declination	−22 35 4.71	" "	+ 0 47.71
Sun's Equa. Hor. Par.	8.99	True Semidiameter	16 14.75
Venus' Equa, Hor. Par.	33.47	" "	32.34

From these elements may be deduced the following times of the phases for the centre of the Earth:

	d	h	m	s	
Ingress, Exterior Contact December	8	8	40	22.6	Washington mean time.
Ingress, Interior Contact	8	9	10	29.2	" "
Least Distance of Centres (13′ 49″.48)	8	10	59	17.6	" "
Egress, Interior Contact	8	12	48	6.7	" "
Egress, Exterior Contact	8	13	18	13.3	" "

Exterior contact at Ingress of Venus with Sun's limb 49° from north point towards the East, when the Sun is in the zenith, in longitude 132° 0′.0 West from Washington, and in latitude 22° 48′.6 South.

Interior contact at Ingress of Venus with Sun's limb 43° from north point towards the East, when the Sun is in the zenith, in longitude 139° 31′.5 West from Washington, and in latitude 22° 48′.7 South.

Interior contact at Egress of Venus with Sun's limb 14° from north point towards the West, when the Sun is in the zenith, in longitude 166° 5′.2 East from Washington, and in latitude 22° 49′.6 South.

Exterior contact at Egress of Venus with Sun's limb 20° from north point towards the West, when the Sun is in the zenith, in longitude 158° 33′.7 East from Washington, and in latitude 22° 49′.7 South.

Approximate Washington Mean Times of the several phases, for any point on the surface of the Earth, may be computed by adding to the times for the centre of the Earth the following corrections, in which ρ is the radius of the Earth at the place, φ' the geocentric latitude, and ω the longitude West from Washington:

For Ingress, Exterior Contact	$-380^{s}\,\rho\sin\varphi' - 503^{s}\,\rho\cos\varphi'\cos(\omega + 300^{\circ}\ 0')$,
For Ingress, Interior Contact	$-509\,\rho\sin\varphi' - 555\,\rho\cos\varphi'\cos(\omega + 288\ 23)$,
For Egress, Interior Contact	$+676\,\rho\sin\varphi' + 331\,\rho\cos\varphi'\cos(\omega + 133\ 50)$,
For Egress, Exterior Contact	$+547\,\rho\sin\varphi' + 311\,\rho\cos\varphi'\cos(\omega + 115\ 3)$.

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1874.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 3	λ Cancri	6	4 38	9 44	174	116	Star 3′.8	south of	☽'s	limb.	
3	υ^2 Cancri	6½	9 21	14 26	324	16	9 40	14 45	350	44	0 18
4	B. A. C. 3138	6	4 3	9 5	291	236	5 2	10 4	46	350	0 59
5	η Leonis	3½	6 37	11 35	276	222	7 49	12 46	35	348	1 12
9	θ Virginis	4½	13 2	17 43	265	265	14 13	18 54	14	355	1 11
10	B. A. C. 4591	6	8 15	12 52	269	219	9 10	13 47	26	339	0 55
14	A^1 Ophiuchi†	5	11 46	16 7	249	200	12 46	17 7	73	31	1 0
14	A^2 Ophiuchi†	6	11 46	16 7	249	200	12 46	17 7	72	30	1 0
14	38 Ophiuchi	6½	12 45	17 6	271	226	13 47	18 8	50	12	1 2
23	96 Piscium	6½	5 51	9 38	292	343	6 51	10 38	122	174	1 0
25	53 Arietis	6	1 24	5 4	332	293	2 32	6 11	95	80	1 8
26	A^1 Tauri	4½	2 11	5 46	252	204	3 8	6 43	162	148	0 57
26	A^2 Tauri	6	2 55	6 30	206	171	Star 2′.9	south of	☽'s	limb.	
29	47 Geminor.	6	9 35	12 58	313	13	10 16	13 38	19	80	0 41
30	ω^1 Cancri	6	4 52	8 12	291	231	6 6	9 25	56	2	1 14
30	ω^2 Cancri	6½	5 32	8 52	323	266	6 40	9 59	20	336	1 7
Feb. 2	B. A. C. 3579	6	3 7	6 15	279	232	3 58	7 6	48	357	0 51
2	*i* Leonis	6	4 51	7 58	292	239	5 40	8 47	27	333	0 49
4	*b* Vriginis†	6	5 6	8 6	278	228	5 56	8 55	32	341	0 50
4	10 Virginis	6	12 28	15 26	245	246	13 49	16 47	23	54	1 21
10	25 Scorpii*	6	11 3	13 39	260	208	12 2	14 37	56	9	0 59
11	3 Sagittarii†	5	12 45	15 16	217	168	13 35	16 6	116	73	0 50
13	ω Sagittarii	5	15 7	17 30	338	291	15 35	17 58	31	347	0 28
19	77 Pisc., *mult.*	6	4 56	6 57	0	47	5 29	7 30	63	113	0 33
22	32 Tauri	6	8 56	10 45	11	67	Star 4′.7	north of	☽'s	limb.	
23	*k* Tauri	5½	10 30	12 18	183	238	Star 2′.7	south of	☽'s	limb.	
26	*c* Geminor.	6	5 19	6 52	261	204	6 46	8 20	86	50	1 28
26	ω^2 Cancri	6½	15 30	17 2	345	30	Star 1′.5	north of	☽'s	limb.	
Mar. 1	42 Leonis	6	8 47	10 7	245	209	10 14	11 34	128	128	1 27
7	B. A. C. 4896	6	15 2	15 58	274	278	16 14	17 11	23	43	1 13
9	22 Scorpii	5	13 46	14 35	279	248	14 54	15 42	30	11	1 7
11	B. A. C. 6220†	6½	13 10	13 51	226	174	14 4	14 45	110	66	0 54
12	B. A. C. 6628†	6	14 16	14 53	222	173	15 2	15 38	131	87	0 45
20	29 Arietis	6½	6 41	6 48	282	335	7 42	7 48	122	175	1 0
25	*c* Geminor.‡	6	14 56	14 42	283	330	15 39	15 25	49	91	0 44
26	υ^1 Canc., *mult.*	7	8 53	8 35	327	351	9 8	8 51	348	21	0 16
26	υ^2 Cancri	6½	9 55	9 38	265	314	11 11	10 54	48	106	1 16
26	υ^3 Cancri	6	12 6	11 48	335	34	Star 3′.2	north of	☽'s	limb.	
28	η Leonis	3½	9 1	8 36	302	274	9 38	9 12	351	339	0 37
Apr. 5	B. A. C. 5335*	6½	10 4	9 7	252	199	11 3	10 6	58	10	0 59
5	B. A. C. 5354	6½	11 27	10 30	301	255	12 2	11 5	4	321	0 35
7	B. A. C. 6120	6½	16 9	15 4	307	285	17 9	16 4	34	24	1 0
7	B. A C. 6127	5	16 53	15 47	293	279	18 10	17 4	54	57	1 18
21	47 Geminor.	6	10 6	8 6	212	272	10 58	8 59	118	178	0 52
27	10 Virginis	6	13 26	11 2	291	316	14 5	11 41	349	22	0 39
May 1	ι^1 Libræ	4½	18 35	15 55	333	12	18 45	16 5	349	30	0 11
22	42 Leonis	6	9 57	5 55	241	232	11 23	7 21	46	75	1 26
28	B. A. C. 4896	6	16 0	11 33	330	347	Star 1′.8	north of	☽'s	limb.	
30	22 Scorpii	5	13 37	9 3	307	274	14 13	9 39	1	335	0 36
June 1	B. A. C. 6220*	6½	12 53	8 11	240	189	13 52	9 10	97	52	0 59
2	B. A. C. 6628†	6	14 33	9 47	242	195	15 34	10 48	112	72	1 1
3	B. A. C. 7077	6	20 10	15 20	304	299	21 32	16 41	100	114	1 22
4	35 Capricorni	6	18 52	13 57	313	283	20 7	15 13	91	75	1 15

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1874.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
June 16	λ Cancri	6	13 6	7 26	225	282	13 59	8 19	92	146	0 53
28	B. A. C. 6120	6½	16 33	10 5	294	277	17 47	11 19	51	48	1 14
28	B. A. C. 6127	5	17 18	10 50	281	272	18 43	12 14	71	80	1 25
July 6	96 Piscium‡	6½	18 44	11 44	300	250	19 37	12 37	117	65	0 53
29	B. A. C. 7550	6	19 10	10 40	311	281	20 21	11 50	117	100	1 11
Aug. 1	10 Ceti	6	22 5	13 22	22	347	22 24	13 41	53	23	0 19
4	54 Arietis	6½	23 24	14 29	338	284	0 16	15 21	85	34	0 52
8	47 Geminor.	6	1 25	16 14	259	203	2 24	17 13	110	51	0 59
20	σ Scorpii	3½	17 5	7 9	237	248	18 32	8 35	90	118	1 26
21	43 Ophiuchi*	6	21 55	11 54	197	244	22 12	12 11	167	216	0 17
21	B. A. C. 6190	6½	19 29	9 24	310	326	20 37	10 33	59	88	1 8
23	B. A. C. 6628‡	6	23 25	13 15	238	281	0 5	13 56	157	205	0 40
25	33 Capricor.	5½	0 8	13 51	318	352	1 10	14 53	102	144	1 2
27	ψ^1 Aquarii	4½	0 16	13 50	316	332	1 26	15 0	121	152	1 10
28	4 Ceti	6	23 3	12 34	310	294	0 17	13 48	131	136	1 14
28	5 Ceti	6	23 24	12 54	31	20	0 37	14 8	50	60	1 14
28	B. A. C. 5	6	23 58	13 29	329	328	1 8	14 39	113	131	1 10
29	73 Piscium	6½	2 54	16 20	27	60	3 8	16 34	49	86	0 14
29	e Piscium	5½	4 12	17 38	246	291	4 48	18 15	178	226	0 36
30	B. A. C. 609	6	2 47	16 9	345	7	3 45	17 8	86	124	0 58
31	π Arietis	5½	23 45	13 4	33	342	Star 5'.0	north of	☽'s	limb.	
31	ρ^2 Arietis	6	3 25	16 43	2	21	4 3	17 22	61	95	0 39
31	ρ^3 Arietis	6	3 2	16 21	281	289	4 16	17 35	139	175	1 14
Sept. 3	136 Tauri	5	1 47	14 54	308	247	2 51	15 57	80	19	1 3
18	B. A. C. 6072*	6½	22 45	10 53	248	297	23 39	11 48	125	178	0 54
21	B. A. C. 7237	6	22 36	10 33	249	272	23 23	11 20	167	198	0 47
22	B. A. C. 7550	6	18 27	6 20	325	288	19 29	7 22	80	54	1 3
23	74 Aquarii‡	6	3 29	15 17	296	344	4 24	16 12	126	177	0 55
25	10 Ceti	6	19 6	6 47	3	313	19 31	7 12	57	7	0 25
29	62 Tauri	6	22 52	10 17	277	221	23 47	11 12	130	72	0 55
30	B. A. C. 1746	6½	3 39	15 0	326	269	4 39	15 59	62	23	0 59
Oct. 1	49 Aurigæ	5½	2 12	13 29	335	274	2 50	14 7	43	342	0 38
2	υ Geminorum	4½	2 51	14 4	1	302	Star 1'.7	north of	☽'s	limb.	
3	υ^2 Cancri†	6	0 53	12 2	288	237	1 43	12 52	62	15	0 49
3	υ^3 Cancri	6	2 4	13 13	289	237	2 59	14 8	60	4	0 55
3	32 Cancri	6	2 46	13 55	299	244	3 39	14 47	48	358	0 53
17	B. A. C. 6628	6	19 16	5 31	10	9	Star 3'.1	north of	☽'s	limb.	
18	B. A. C. 7077*	6	1 21	11 32	222	270	1 39	11 50	185	235	0 18
19	33 Capricorni	5½	23 1	9 7	212	234	Star 2'.2	south of	☽'s	limb.	
21	ψ^1 Aquarii	4½	1 29	11 27	299	330	2 34	12 33	135	176	1 6
22	4 Ceti	6	0 36	10 30	277	287	1 36	11 30	163	189	1 0
22	5 Ceti	6	0 56	10 50	277	292	1 55	11 50	162	191	1 0
22	B. A. C. 5	6	1 23	11 17	297	318	2 31	12 25	141	177	1 8
23	73 Piscium	6½	3 18	13 8	339	16	4 14	14 5	92	137	0 57
23	e Piscium	5½	5 13	15 2	210	259	Star 2'.5	south of	☽'s	limb.	
24	B. A. C. 609	6	2 14	12 0	325	334	3 23	13 10	107	140	1 9
25	ρ^2 Arietis	6	1 32	11 15	34	0	Star 0'.2	north of	☽'s	limb.	
25	ρ^3 Arietis	6	0 52	10 34	295	251	2 2	11 44	132	109	1 10
25	δ Arietis	4½	9 1	18 42	304	357	9 51	19 32	85	135	0 50
26	32 Tauri	6	0 25	10 3	208	151	Star 5'.0	south of	☽'s	limb.	
26	33 Tauri	6	0 48	10 26	354	297	1 24	11 3	62	8	0 36
29	47 Geminor.	6	1 25	10 52	184	128	Star 7'.7	south of	☽'s	limb.	
31	B. A. C. 3138	6	5 45	15 2	271	214	7 1	16 19	51	0	1 17

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1874.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Nov. 17	74 Aquarii	6	1 55	10 7	314	352	2 59	11 11	117	162	1 4
22	B. A. C. 1032	6½	0 16	8 9	31	337	Star 5′.5	north of	☽'s	limb.	
22	τ^1 Arietis	5½	1 17	9 9	31	344	Star 4′.0	north of	☽'s	limb.	
22	65 Arietis	6	1 38	9 31	347	304	2 28	10 20	75	48	0 49
23	62 Tauri	6	23 21	7 9	274	217	0 15	8 4	134	76	0.55
24	B. A. C. 1746	6½	2 45	10 30	16	314	Star 2′.7	north of	☽'s	limb.	
24	136 Tauri	5	10 36	18 19	282	342	11 31	19 14	68	124	0 55
26	c Geminorum	6	2 7	9 44	180	124	Star 6′.7	south of	☽'s	limb.	
26	ω^1 Cancri	6	10 37	18 12	248	307	11 45	19 20	68	128	1 8
26	ω^2 Cancri	6½	11 27	19 2	196	255	12 7	19 42	121	180	0 40
Dec. 13	κ Capricorni	5	0 54	7 24	28	66	1 0	7 30	38	77	0 6
17	73 Piscium	6½	0 51	7 5	338	335	1 59	8 13	103	123	1 8
17	88 Piscium‡	6	6 41	12 55	281	333	7 34	13 48	130	181	0 53
18	B. A. C. 609	6	1 44	7 54	301	297	3 0	9 10	133	159	1 16
19	π Arietis	5½	22 29	4 35	347	293	23 11	5 17	76	22	0 42
19	ρ^2 Arietis	6	2 0	8 6	326	301	3 9	9 15	100	111	1 10
19	ρ^3 Arietis	6	2 8	8 14	242	221	2 45	8 51	183	181	0 38
19	δ Arietis*	4½	10 16	16 21	351	39	10 40	16 45	48	94	0 24
20	33 Tauri	6	2 16	8 18	306	260	3 30	9 32	107	94	1 14
23	47 Geminor.	6	1 43	7 34	227	170	2 24	8 15	140	81	0 41
24	υ^2 Cancri	6½	10 2	15 47	335	26	Star 0′.4	north of	☽'s	limb.	

NOTES.—B. A. C., British Association Catalogue.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct* vision, and are reckoned from the Moon's *North Point* and from its *Vertex* towards the West. For *inverted* image, add 180° to the angles given.

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 2097	6½	+0.75	+6.2	+28 17.6	1 12 32.7	+ 0 57.1	-1.0088	.5782	+.0090	-19	-62
49 Aurigae	5½	0.76	6.0	28 7.2	14 30.6	+ 2 50.4	-0.8130	.5777	.0033	- 4	-62
54 Aurigae	6	0.77	5.9	28 22.4	16 16.4	+ 4 32.2	-1.0794	.5774	+.0006	-25	-62
39 Geminor.	6½	0.78	5.3	26 14.8	2 0 11.5	-11 50.8	+1.0703	.5752	-.0237	+90	+43
40 Geminor.	6½	0.78	5.3	26 5.1	0 27.8	-11 35.2	+1.2351	.5749	.0250	+90	+57
47 Geminor.	6	0.80	5.0	27 3.8	5 20.8	- 6 53.3	+0.0446	.5732	0.378	+47	-15
53 Geminor.	6	+0.81	+4.8	+28 6.9	7 12.7	- 5 5.6	-1.1500	.5725	-.0431	-32	-62
59 Geminor.	6½	0.82	4.6	27 52.8	10 47.6	- 1 38.7	-1.0740	.5707	.0531	-24	-62
ι Geminorum	4	0.82	4 5	28 2.8	11 17.1	- 1 10.3	-1.2788	.5706	.0540	-61	-62
υ Geminorum	4½	0.81	4.2	27 10.5	15 34.4	+ 2 57.4	-0.6081	.5682	.0659	+ 9	-56
[illegible] Geminorum	6	0.80	4.0	26 5.0	19 3.3	+ 6 18.7	+0.3122	.5661	.0747	+63	- 5
φ Geminorum	5	0.81	3.6	27 5.4	23 1.5	+10 8.2	-1.0827	.5639	.0847	-24	-63
ω¹ Cancri	6	+0.80	+3.4	+25 44.2	3 2 14.5	-10 45.8	+0.0800	.5617	-.0925	+48	-19
ω² Cancri	6½	0.79	3.2	25 26.1	2 35.7	-10 25.3	+0.3706	.5613	.0939	+67	- 4
ψ¹ Cancri	6½	0.80	3.1	26 12.9	6 15.0	- 6 53.9	-0.8245	.5591	.1023	- 4	-64
ψ² Cancri	6	0.79	3.1	25 53.3	6 21.8	- 6 47.4	-0.4864	.5591	.1024	+16	-51
λ Cancri	6	0.77	2.9	24 25.1	10 48.0	- 2 30.7	+0.6138	.5557	.1133	+88	+ 7
υ¹ Cancri, *mult.*	7	0.62	3.0	24 56.7	13 29.7	+ 0 5.4	-0.2662	.5534	.1195	+29	-40
υ² Cancri	6½	+0.76	+2.6	+24 33.7	14 21.3	+ 0 55.1	+0.0416	.5528	-.1218	+46	-24
υ³ Cancri	6	0.76	2.5	24 30.3	15 39.5	+ 2 10.6	-0.0555	.5520	.1242	+40	-29
32 Cancri	6	0.76	2.4	24 30.7	16 19.3	+ 2 49.1	-0.1469	.5516	.1253	+35	-34
ξ Cancri	5	0.67	1.3	22 33.2	4 8 57.8	- 5 6.3	-0.4073	.5384	.1590	+21	-52
79 Cancri	6	0.67	1.3	22 30.4	9 25.7	- 4 39.3	-0.4298	.5374	.1605	+20	-53
B. A. C. 3138	6	0.66	1.3	21 48.1	10 58.8	- 3 9.2	+0.1000	.5367	.1626	+48	-26
B. A. C. 3292	6½	+0.59	+0.5	+20 52.0	23 6.8	+ 8 35.3	-1.0025	.5271	-.1828	-14	-69
η Leonis	3½	0.47	0.1	17 22.6	5 13 17.9	- 1 39.9	+0.0701	.5164	.2027	+48	-33
42 Leonis	6	0.40	0.0	15 36.6	20 45.5	+ 5 34.3	+0.4599	.5112	.2117	+72	-13
B. A. C. 3579	6	0.36	0.0	14 59.2	6 0 23.6	+ 9 6.0	+0.3684	.5084	.2158	+65	-19
i Leonis	6	+0.36	-0.1	14 47.0	2 9.9	+10 49.2	+0.2083	.5073	.2174	+55	-27
ν Virginis	4½	-0.02	0.6	7 14.1	7 18 27.0	+ 1 59.0	-0.8730	.4880	.2454	- 3	-83
B. A. C. 3996	6	-0.04	-0.3	+ 5 53.6	19 17.8	+ 2 46.9	+0.1570	.4875	-.2460	+52	-34
b Virginis	6	0.11	-0.1	4 21.4	8 1 25.8	+ 8 45.0	+0.3432	.4861	.2480	+63	-25
10 Virginis	6	0.16	+0.1	+ 2 36.3	7 57.9	- 8 51.7	+0.9055	.4850	.2494	+90	+ 5
γ Virginis	2½	0.35	0.1	- 0 45.5	9 2 15.8	+ 8 57.1	-0.0438	.4843	.2510	+46	-41
B. A. C. 4277	6	0.36	0.1	0 53.0	3 20.4	+10 0.0	+0.0883	.4842	.2510	+39	-48
38 Virginis	6	0.43	0.5	2 52.1	8 48.0	- 8 41.0	-0.7369	.4847	.2506	+84	- 6
k Virginis	6	-0.46	+0.4	- 3 7.9	12 27.6	- 5 7.3	+0.1121	.4853	-.2500	+49	-38
46 Virginis	6	0.46	0.2	2 41.4	12 59.8	- 4 35.9	-0.5096	.4853	.2499	+17	-74
48 Virginis	6	0.50	0.2	2 59.1	14 52.3	- 2 46.4	-0.6527	.4858	.2496	+ 9	-86
θ Virginis	4½	0.53	0.6	4 51.9	18 16.6	+ 0 32.5	+0.5754	.4863	.2488	+78	-14
m Virginis	6	0.72	0.6	8 4.0	10 11 56.8	- 6 16.0	-0.2453	.4921	.2424	+29	-57
B. A. C. 4591	6	0.76	0.7	9 4.6	15 0.8	- 3 17.0	+0.1242	.4935	.2409	+49	-37
λ Virginis	4½	-0.95	+0.8	-12 47.4	11 8 9.2	-10 37.6	+0.1542	.5026	-.2294	+48	-35
5 Libræ	6	1.11	0.4	14 55.6	22 3.2	+ 2 52.0	-0.6187	.5124	.2164	+ 6	-85
α¹ Libræ	6	1.14	0.4	15 28.3	12 0 26.7	+ 5 11.1	-0.5404	.5144	.2137	+ 9	-78
α² Libræ	2½	1.14	0.4	15 31.0	0 32.5	+ 5 16.8	-0.5129	.5144	.2136	+11	-76
B. A. C. 4896	6	1.16	0.9	17 15.9	0 51.5	+ 5 35.2	+1.3149	.5145	.2133	+73	+42
ι² Libræ	5½	1.29	+0.6	19 10.3	11 38.2	- 7 57.9	+1.1408	.5234	.2000	+71	+24
28 Libræ	6	-1.30	-0.3	-17 42.0	15 19.4	- 4 23.7	-1.1735	.5264	-.1952	-34	-90
B. A. C. 5109	6	1.38	0.2	19 14.4	20 53.8	+ 0 59.9	-0.5790	.5316	.1868	+ 4	-82
B. A. C. 5281	6	1.50	1.1	20 36.8	13 8 39.7	-11 37.4	-1.1866	.5425	.1669	-39	-90
δ Scorpii	2½	1.54	0.7	22 15.7	9 41.3	-10 38.0	+0.3996	.5435	.1651	+52	-22
B. A. C. 5335	6½	1.57	0.7	23 16.0	12 16.5	- 8 8.0	+1.0479	.5456	.1605	+67	+18
B. A. C. 5354	6½	-1.58	-0.8	-23 21.3	13 27.1	- 6 59.9	+0.9552	.5473	-.1579	+67	+12

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
19 Scorpii	6	-1.64	- 1.3	-23 51.8	13 18 43.0	- 1 54.9	+0.6855	.5519	-.1474	+67	- 6
ρ Ophi., *mult.*	5	1.65	1.7	23 9.3	20 54.9	+ 0 12.3	-0.3833	.5540	.1430	+ 8	-67
22 Scorpii	5	1.69	1.5	24 50.1	22 53.4	+ 2 6.7	+1.1171	.5558	.1388	+65	+26
25 Scorpii	6	1.75	2.2	25 18.0	14 6 1.8	+ 8 59.6	+0.6696	.5559	.1228	+63	- 6
18 Ophiuchi	6	1.74	2.6	24 25.0	7 16.4	+10 11.5	-0.4111	.5635	.1200	+ 5	-70
B. A. C. 5641	6½	1.75	2.6	24 36.9	7 57.1	+10 50.8	-0.2833	.5643	.1183	+11	-60
B. A. C. 5709	6	-1.78	- 3.0	-24 54.1	11 33.5	- 9 40.9	-0.3925	.5675	-.1094	+ 4	-69
26 Ophiuchi	6	1.78	3.3	24 47.7	11 38.3	- 9 36.2	-0.5118	.5675	.1091	- 2	-78
B. A. C. 5800	6½	1.85	3.3	26 49.9	17 25.2	- 4 2.4	+1.0316	.5725	.0944	+63	+20
A^1 Ophiuchi	5	1.85	3.5	26 25.0	17 55.2	- 3 33.5	+0.5492	.5728	.0934	+54	-13
A^2 Ophiuchi	6	1.85	3.4	26 24.9	17 55.2	- 3 33.5	+0.5480	.5728	.0934	+54	-13
38 Ophiuchi	6½	1.86	3.6	26 29.3	18 50.0	- 2 40.8	+0.5400	.5736	.0909	+53	-13
B. A. C. 5909	6½	-1.88	- 4.4	-26 10.3	15 0 32.7	+ 2 48.8	-0.2677	.5781	-.0755	+ 7	-60
3 Sagittarii	5	1.94	4.8	27 46.9	6 50.8	+ 8 52.3	+0.9838	.5825	.0580	+62	+16
B. A. C. 6024	6½	1.93	5.1	27 1.2	7 58.6	+ 9 57.5	+0.1289	.5833	.0549	+26	-36
B. A. C. 6063	6½	1.96	5.3	28 2.7	10 27.7	-11 39.3	+1.0604	.5852	.0473	+62	+23
B. A. C. 6120	6½	1.98	5.8	28 22.3	14 24.5	- 7 52.0	+1.2337	.5873	.0356	+62	+45
B. A. C. 6191	6½	1.99	4.0	28 19.6	18 32.7	- 3 53.7	+1.0612	.5895	.0236	+62	+23
B. A. C. 6220	6½	-1.97	- 4.0	-28 29.3	20 20.1	- 2 10.7	+1.1907	.5905	-.0185	+62	+38
B. A. C. 7550	6	1.41	11.9	20 12.0	19 2 50.4	+ 1 10.4	+0.6683	.5738	+.2062	+69	- 8
29 Aqua., *mult.*	6	1.41	11.9	17 34.4	10 51.8	+ 8 53.8	-0.2512	.5685	.2218	+23	-58
56 Aquarii	6	1.44	12.5	15 13.9	22 43.5	- 3 40.6	+0.1451	.5603	.2398	+45	-36
τ^3 Aquarii	4	1.36	12.2	14 15.6	20 7 7.8	+ 4 25.7	+1.2397	.5550	.2510	+76	+31
74 Aquarii	6	1.35	11.7	12 17.4	8 51.1	+ 6 5.4	-0.2909	.5539	.2531	+25	-61
ψ^1 Aquarii	4½	-1.26	-10.9	- 9 46.6	18 48.8	- 8 17.7	-0.2218	.5480	+.2634	+29	-56
ψ^2 Aquarii	4½	1.25	10.9	9 52.4	19 44.4	- 7 24.0	+0.1191	.5477	.2643	+47	-37
ψ^3 Aquarii	5	1.24	11.0	10 18.1	20 12.7	- 6 56.7	+0.6717	.5475	.2645	+80	- 8
B A. C. 8214	6½	1.18	10.2	8 9.9	21 3 44.0	+ 0 19.2	+0.5498	.5439	.2702	+74	-15
B. A. C. 8274	6	1.12	9.6	7 5.0	9 41.6	+ 6 4.7	+1.0907	.5410	.2735	+83	+17
27 Piscium	5½	1.10	8.4	4 15.5	14 23.0	+10 36.7	-0.4474	.5391	.2755	+20	-70
29 Piscium	5½	-1.08	- 8.3	- 3 43.9	15 50.1	-11 59.1	-0.5745	.5389	+.2759	+14	-79
4 Ceti	6	1.05	8.0	3 15.1	18 34.7	- 9 20.0	-0.2967	.5379	.2767	+28	-60
5 Ceti	6	1.05	8.0	3 9.0	18 47.7	- 9 7.4	-0.3377	.5378	.2768	+26	-63
B. A. C. 5	6	1.05	7.9	2 55.5	19 2.2	- 8 53.4	-0.4965	.5377	.2768	+18	-73
10 Ceti	6	0.98	6.7	0 45.0	22 3 23.5	- 0 48.5	-0.3612	.5353	.2778	+25	-64
14 Ceti	6½	0.93	6.6	1 12.0	7 34.4	+ 3 14.1	+1.2534	.5346	.2776	+89	+29
73 Piscium	6½	-0.83	- 3.7	+ 4 58.8	21 21.8	- 7 25.5	-1.1577	.5332	+.2740	-21	-85
77 Pisc., *mult.*	6	0.82	3.9	4 14.1	21 48.8	- 6 59.4	-0.2841	.5333	.2738	+29	-60
e Piscium	5½	0.81	3.6	4 58.9	23 1.7	- 5 48.9	-0.7045	.5333	.2733	+ 7	-85
88 Piscium	6	0.79	2.9	6 19.7	23 1 59.4	- 2 56.9	-1.2577	.5335	.2719	-30	-84
96 Piscium	6½	0.72	2.4	6 38.5	8 44.4	+ 3 34.8	+0.2446	.5338	.2677	+57	-30
B. A.C. 481	6½	0.68	2.0	7 0.0	12 1.3	+ 6 45.3	+0.7584	.5341	.2653	+90	- 3
NEPTUNE				+ 8 23.2	16 14.8	+11 50.5	+0.4667	.5344	+.2618	+71	-18
o Piscium	4	-0.64	- 1.3	8 31.3	16 22.9	+10 58.3	+0.3639	.5348	.2616	+64	-23
54 Ceti	6	0.63	- 0.4	10 25.1	18 55.7	-10 33.9	-0.8976	.5353	.2595	- 4	-80
B. A. C. 609	6	0.59	+ 0.4	11 41.0	22 54.1	- 6 43.3	-1.1617	.5362	.2556	-22	-79
29 Arietis	6½	0.43	2.4	14 28.5	24 14 18.7	+ 8 10.5	-0.2087	.5408	.2377	+33	-50
o Arietis	6	0.36	2.7	14 46.6	19 37.0	-10 42.0	+0.7221	.5427	.2298	+90	0
π Arietis, *mult.*	5½	-0.35	+ 3.7	+16 56.4	21 43.8	- 8 39.4	-1.0134	.5438	+.2266	-13	-73
ρ^2 Arietis	6	0.32	4.2	17 49.3	25 0 39.6	- 5 49.7	-1.2618	.5448	.2220	-35	-72
ρ^3 Arietis	6	0.31	4.1	17 31.2	0 55.7	- 5 34.1	-0.8935	.5449	.2218	- 5	-73
53 Arietis	6	0.25	4.3	17 23.6	5 52.8	- 0 47.2	+0.3151	.5469	.2136	+62	-19
54 Arietis	6½	0.25	4.6	18 18.7	6 16.4	- 0 24.4	-0.5460	.5471	.2131	+14	-65
δ Arietis	4½	-0.23	+ 5.0	+19 15.0	7 42.7	+ 0 58.8	-1.2098	.5480	+.2104	-31	-71

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. $\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 1032	6½	−0.18	+5.5	+20 3.2	25 11 48.3	+ 4 56.0	−1.1915	.5497	+.2031	−29	−70
τ^2 Arietis	5½	0.17	5.6	20 17.5	12 38.5	+ 5 44.4	−1.2688	.5502	.2016	−38	−70
65 Arietis	6	0.16	5.7	20 21.4	13 22.8	+ 6 27.2	−1.1871	.5505	.1999	−29	−70
B. A. C. 1143	6	−0.04	6.1	20 31.7	22 9.4	− 9 4.8	+0.3165	.5544	.1836	+62	−16
32 Tauri	6	+0.02	6.8	22 6.9	26 3 29.8	− 3 55.7	−0.3794	.5572	.1718	+23	−51
33 Tauri	6	0.02	7.0	22 48.6	3 34.3	− 3 51.5	−1.0879	.5573	.1718	−22	−67
A^1 Tauri	4½	+0.07	+6.7	+21 44.2	6 52.3	− 0 40.5	+0.5810	.5585	+.1647	+83	0
A^2 Tauri	6	0.08	6.7	21 40.1	7 8.6	− 0 24.8	+0.6968	.5585	.1643	+90	+ 6
62 Tauri	6	0.18	7.6	24 0.5	15 3.9	+ 7 13.3	−0.5086	.5621	.1462	+15	−56
υ^1 Tauri	4½	0.20	7.2	22 31.7	16 4.3	+ 8 11.4	+1.1809	.5625	.1438	+90	+42
υ^2 Tauri	6	0.20	7.2	22 42.7	16 29.4	+ 8 35.6	+1.0486	.5630	.1425	+90	+31
B. A. C. 1518	6	0.37	7.8	24 23.4	27 4 37.5	− 3 43.1	+0.8505	.5675	.1125	+90	+21
k Tauri	5½	+0.38	+7.9	+24 51.4	5 24.1	− 2 58.2	+0.4483	.5677	+.1103	+73	− 2
B. A. C. 1746	6½	0.60	8.3	27 34.8	20 58.9	−11 58.5	−1.0137	.5715	.0692	−19	−63
125 Tauri	6	0.61	7.8	25 49.6	22 35.6	−10 25.4	+0.9447	.5717	.0646	+90	+31
136 Tauri	5	0.68	8.1	27 34.9	28 4 8.6	− 5 5.0	−0.5922	.5723	.0497	+10	−54
139 Tauri	5½	0.70	7.6	25 56.3	6 6.3	− 3 11.7	+1.2385	.5724	.0442	+90	+57
B. A. C 2097	6½	0.87	7.4	28 17.6	19 22.6	+ 9 34.5	−0.9224	.5720	.0064	−12	−62
49 Aurigae	5½	+0.89	+7.2	+28 7.2	21 22.6	+11 30.0	−0.7300	.5716	+.0008	+ 1	−62
54 Aurigae	6	0.91	7.2	28 22.4	23 10.2	− 6 46.4	−1.0028	.5715	−.0036	−18	−62
39 Geminor.	6½	0.96	6.2	26 14.8	29 7 13.5	− 3 1.3	+1.1455	.5696	.0257	+90	+49
47 Geminor.	6	1.02	5.9	27 3.8	12 27.8	+ 2 1.4	+0.1001	.5678	.0404	+49	−12
53 Geminor.	6	1.05	5.9	28 6.9	14 21.5	+ 3 50.9	−1.1074	.5673	.0447	−28	−62
59 Geminor.	6½	1.07	5.6	27 52.8	17 59.6	+ 7 20.9	−1.0392	.5657	.0549	−21	−62
ι Geminorum	4	+1.08	+5.5	+28 2.9	18 29.6	+ 7 49.9	−1.2465	.5653	−.0565	−46	−62
υ Geminorum	4½	1.10	5.1	27 10.5	22 50.7	−11 58.7	−0.5812	.5635	.0677	+11	−54
c Geminorum	6	1.11	4.5	26 5.0	30 2 22.6	− 8 34.4	+0.3360	.5617	.0771	+65	− 4
ϕ Geminorum	5	1.15	4.3	27 5.5	6 24.0	− 4 41.7	−1.0772	.5596	.0871	−24	−63
ω^1 Cancri	6	1.15	3.8	25 44.2	9 39.4	− 1 33.2	+0.0847	.5580	.0948	+48	−19
ω^2 Cancri	6½	1.15	3.8	25 26.1	10 0.9	− 1 12.5	+0.3761	.5578	.0955	+67	− 4
ψ^1 Cancri	6½	+1.17	+3.5	+26 12.9	13 42.9	+ 2 21.6	−0.8344	.5554	−.1045	− 5	−64
ψ^2 Cancri	6	1.17	3.4	25 53.3	13 49.8	+ 2 28.2	−0.4950	.5554	.1047	+16	−52
λ Cancri	6	1.17	2.9	24 25.1	18 19.0	+ 6 48.0	+0.5996	.5528	.1147	+87	+ 6
υ^1 Cancri, *mult.*	7	1.18	2.6	24 56.7	21 2.4	+ 9 25.8	−0.2915	.5509	.1211	+27	−41
υ^2 Cancri	6½	1.18	2.5	24 33.7	21 55.2	+10 16.7	+0.0155	.5502	.1229	+44	−25
υ^3 Cancri	6	1.18	2.4	24 30.3	23 13.6	+11 32.4	−0.0853	.5494	.1257	+39	−31
32 Cancri	6	+1.18	+2.3	+24 30.7	23 53.8	−11 48.8	−0.1781	.5489	−.1274	+33	−36
ξ Cancri	5	1.19	0.6	22 33.2	31 16 40.6	+ 4 24.2	−0.4828	.5370	.1614	+17	−56
79 Cancri	6	1.19	0.5	22 30.4	17 8.6	+ 4 51.3	−0.5068	.5370	.1618	+16	−58
B. A. C. 3138	6	+1.18	+0.3	+21 48.1	18 51.8	+ 6 31.1	−0.0214	.5356	−.1650	+42	−32

FEBRUARY.

Name.	Mag.	$\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
B. A. C. 3292	6½	+1.16	−0.9	+20 51.9	1 6 54.0	− 5 49.8	−1.1128	.5267	−.1851	−23	−69
η Leonis	3½	1.09	2.0	17 22.5	21 7.7	+ 7 57.7	−0.0767	.5169	.2052	+39	−40
42 Leonis	6	1.05	2.5	15 36.5	2 4 35.9	− 8 47.6	+0.2956	.5116	.2143	+60	−22
B. A. C. 3579	6	1.03	2.8	14 59.1	8 14.1	− 5 15.8	+0.1946	.5095	.2181	+54	−28
i Leonis	6	1.02	2.9	14 46.9	10 0.4	− 3 32.5	+0.0300	.5083	.2200	+45	−36
ν Virginis	4½	0.76	4.9	7 14.0	4 2 15.7	+11 35.4	−1.1402	.4894	.2477	−20	−83
B. A. C. 3996	6	+0.73	−4.8	+ 5 53.6	4 6.4	−10 36.8	−0.1122	.4889	−.2484	+38	−49
b Virginis	6	0.68	4.8	4 21.3	10 14.1	− 4 39.0	+0.0634	.4873	.2502	+47	−40
10 Virginis	6	0.63	4.8	+ 2 36.2	15 46.1	+ 0 44.2	+0.6179	.4861	.2514	+83	−12
γ Virg., *mult.*	2½	0.48	5.1	− 0 45.6	5 10 5.1	− 5 25.8	−0.2705	.4844	.2524	+30	−59
B. A. C. 4277	6	0.47	5.1	0 53.1	11 9.8	− 4 22.8	−0.4041	.4845	.2522	+23	−67
38 Virginis	6	+0.42	−4.9	− 2 52.2	16 38.4	+ 0 57.1	+0.4182	.4847	−.2515	+68	−22

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
k Virginis	6	+0.40	- 5.0	- 3 8.0	5 20 18.8	+ 4 31.6	+0.2121	.4849	-.2508	+32	-55
46 Virginis	6	0.39	5.2	2 41.5	20 51.1	+ 5 3.1	-0.8364	.4849	.2507	- 1	-90
48 Virginis	6	0.37	5.2	2 59.2	22 44.1	+ 6 53.1	-0.9815	.4852	.2502	- 9	-90
θ Virginis	4½	0.33	4.9	4 52.0	6 2 9.4	+10 12.9	+0.2485	.4857	.2493	+57	-31
m Virginis	6	0.17	4.8	8 4.1	19 56.7	+ 3 31.6	-0.5842	.4903	.2420	+12	-81
B. A. C. 4591	6	+0.14	4.7	9 4.7	23 2.3	+ 6 32.1	-0.2133	.4912	.2403	+31	-55
λ Virginis	4½	-0.04	- 4.4	-12 47.5	7 16 21.8	- 0 37.2	-0.1808	.4991	-.2281	+30	-54
5 Libræ	6	0.18	4 4	14 55.7	8 6 27.9	-10 55.5	-0.9534	.5080	.2140	-14	-90
α¹ Libræ	6	0.21	4.3	15 28.4	8 53.7	- 8 34.1	-0.8730	.5094	.2115	- 9	-90
α² Libræ	2½	0.21	4.3	15 31.1	8 59.6	- 8 28.3	-0.8451	.5095	.2114	- 8	-90
B. A. C. 4896	6	0.23	3.7	17 16.0	9 18.9	- 8 9.6	+0.9982	.5096	.2111	+73	+12
ι¹ Libræ	4½	0.34	3.6	19 18.9	19 42.7	+ 1 55.4	+1.0998	.5175	.1981	+71	+20
ι² Libræ	5½	-0.35	- 3.7	-19 10.4	20 15.7	+ 2 27.4	+0.8368	.5177	-.1976	+71	+ 2
B. A. C. 5109	6	0.44	4.2	19 14.5	9 5 42.8	+11 36.8	-0.8923	.5254	.1838	-14	-90
δ Scorpii	2½	0.60	4.0	22 15.7	18 45.8	+ 0 14.4	+0.1128	.5364	.1620	+36	-37
B. A. C. 5335	6½	0.63	3.8	23 16.0	22 24.2	+ 2 47.6	+0.7718	.5391	.1570	+67	0
B. A. C. 5354	6½	0.64	3.8	23 21.4	22 36.3	+ 3 57.3	+0.6792	.5399	.1548	+66	- 6
19 Scorpii	6	0.70	4.0	23 51.8	10 3 59.5	+ 9 9.5	+0.4157	.5446	.1445	+51	-21
ρ Oph., *mult.*	5	-0.72	- 4.4	-23 9.3	6 13.5	+11 19.0	-0.6599	.5465	-.1401	- 6	-90
22 Scorpii	5	0.76	4.0	24 50.2	8 14.5	-10 44.2	+0.8584	.5483	.1358	+65	+ 6
25 Scorpii	6	0.83	4.3	25 18.0	15 32.0	- 3 42.1	+0.4189	.5550	.1195	+48	-20
18 Ophiuchi	6	0.84	4.7	24 25.0	16 48.2	- 2 28.8	-0.6699	.5562	.1167	- 9	-90
B. A. C. 5641	6½	0.85	4.7	24 36.9	17 29.8	- 1 48.6	-0.5395	.5571	.1149	- 3	-80
B. A. C. 5709	6	0.89	4.8	24 54.1	21 10.7	+ 1 44.4	-0.6431	.5598	.1067	- 9	-90
26 Ophiuchi	6	-0.89	- 4.9	-24 47.8	21 15.6	+ 1 49.1	-0.7633	.5598	-.1066	-16	-90
B. A. C. 5800	6½	0.96	4.7	26 49.9	11 3 9.7	+ 7 30.2	+0.8052	.5648	.0919	+63	+ 3
A¹ Ophiuchi	5	0.96	4.8	26 25.0	3 40.3	+ 7 59.7	+0.3195	.5655	.0904	+40	-26
A² Ophiuchi	6	0.96	4.8	26 24.9	3 40.4	+ 7 59.8	+0.3183	.5655	.0904	+40	-26
38 Ophiuchi	6½	0.97	4.9	26 29.3	4 36.2	+ 8 53.5	+0.3120	.5664	.0880	+39	-26
B. A. C. 5909	6½	1.02	5.4	26 10.3	10 26.5	- 9 29.3	-0.4911	.5709	.0726	- 4	-77
3 Sagittarii	5	-1.10	- 5.4	-27 46.9	16 51.2	- 3 19.3	+0.7834	.5754	-.0555	+63	+ 2
B. A. C. 6024	6½	1.10	5.7	27 1.2	18 0.2	- 2 12.9	-0.0759	.5761	.0524	+16	-48
B. A. C. 6063	6½	1.13	5.6	28 2.7	20 32.0	+ 0 13.0	+0.8720	.5778	.0449	+62	+ 8
B. A. C. 6120	6½	1.17	5.8	28 22.3	12 0 33.1	+ 4 4.7	+1.0505	.5806	.0334	+62	+22
B. A. C. 6127	5	1.17	5.8	28 28.2	1 3.9	+ 4 34.3	+1.1366	.5808	.0323	+62	+31
B. A. C. 6190	6½	1.21	6.1	28 41.5	4 45.0	+ 8 6.7	+1.2656	.5830	.0212	+62	+54
B. A. C. 6191	6½	-1.21	- 6.2	-28 19.6	4 45.3	+ 8 7.0	+0.8859	.5830	-.0212	+62	+ 9
B. A. C. 6194	6	1.20	6.5	27 5.3	5 3.1	+ 8 24.1	-0.4057	.5830	.0205	- 5	-70
B. A. C. 6220	6½	1.22	6.3	28 29.4	6 34.4	+ 9 51.8	+1.0198	.5838	.0157	+62	+20
ϕ Sagittarii	3½	1.28	7.3	27 7.2	15 51.4	- 5 13.5	-0.4144	.5883	+.0123	- 6	-71
σ Sagittarii	2½	1.30	7.8	26 27.2	19 36.1	- 1 37.8	-1.0311	.5894	.0240	-41	-90
τ Sagittarii	3½	1.34	7.8	27 51.3	13 0 5.1	+ 2 40.4	+0.5451	.5905	.0375	+49	-13
B. A. C. 6562	6½	-1.34	- 8.3	-26 7.2	2 32.7	+ 5 1.9	-1.1282	.5911	+.0471	-46	-90
B. A. C. 6628	6	1.38	8.2	28 6.5	6 50.6	+ 9 9.3	+1.1272	.5920	.0615	+62	+29
B. A. C. 6666	6	1.38	8.5	27 14.6	8 55.3	+11 9.0	+0.3738	.5920	.0651	+40	-22
ω Sagittarii	5	1.42	9.3	26 38.1	18 54.6	- 3 16.1	+0.5563	.5920	.0957	+54	-12
A Sagittarii	5	1.42	9.3	26 32.2	20 7.3	- 2 6.4	+0.5762	.5921	.1002	+56	-11
B. A. C. 7077	6	1.45	10.2	25 22.3	14 9 15.7	+10 30.1	+0.9596	.5894	.1377	+65	+13
B. A. C. 8214	6½	-1.27	-10.2	- 8 9.9	17 13 1.9	+11 25.0	+0.7073	.5523	+.2771	+82	- 7
B. A. C. 8274	6	1.24	9.8	7 5.0	18 48.7	- 7 0.3	+1.2552	.5499	.2805	+83	+30
24 Piscium	6½	1.25	9.2	3 51.4	20 46.0	- 5 7.0	-1.3712	.5495	.2815	-44	-90
27 Piscium	5½	1.23	9.1	4 15.5	23 20.6	- 2 37.8	-0.2491	.5485	.2825	+30	-58
29 Piscium	5½	1.23	8.9	3 43.9	18 0 45.0	- 1 16.2	-0.3699	.5479	.2830	+24	-65
4 Ceti	6	-1.22	- 8.7	- 3 15.1	3 24.3	+ 1 17.5	-0.0900	.5473	+.2838	+39	-48

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0 Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
5 Ceti	6	-1.22	-8.7	- 3 9.1	18 3 36.8	+ 1 29.6	-0.1298	.5471	+.2838	+37	-51
B. A. C. 5	6	1.22	8.6	2 55.5	3 50.8	+ 1 43.1	-0.2856	.5470	.2839	+29	-60
10 Ceti	6	1.18	7.7	- 0 45.0	11 55.2	+ 9 31.0	-0.1342	.5449	.2848	+37	-51
73 Piscium	6½	1.09	5.3	+ 4 58.7	19 5 16.5	+ 2 16.9	-0.8845	.5431	.2807	- 3	-85
77 Pisc., *mult.*	6	1.08	5.2	4 14.1	5 42.6	+ 2 42.1	-0.0249	.5429	.2804	+42	-44
e Piscium	5½	1.08	5.0	4 58.9	6 52.9	+ 3 50.1	-0.4364	.5429	.2798	+21	-68
88 Piscium	6	-1.07	-4.4	+ 6 19.6	9 44.5	+ 6 35.9	-0.9757	.5429	+.2777	- 8	-84
96 Piscium	6½	1.02	3.7	6 38.5	16 15.7	-11 6.2	+0.5104	.5430	.2738	+75	-16
B. A. C. 481	6½	0.99	3.4	6 59.9	19 26.1	- 8 2.2	+1.0198	.5434	.2710	+90	+13
ο Piscium	4	0.96	2.6	8 31.3	23 39.1	- 3 57.9	+0.6364	.5437	.2672	+85	- 9
Neptune				8 35.2	20 0 20.7	- 3 17.6	+0.7579	.5440	.2668	+90	- 2
54 Ceti	6	0.96	1.8	10 25.1	2 6.9	- 1 35.0	-0.6032	.5441	.2649	+12	-76
B. A. C. 609	6	-0.94	-1.1	+11 41.0	5 57.7	+ 2 7.9	-0.8604	.5446	+.2607	- 2	-79
29 Arietis	6½	0.80	+1.0	14 28.5	20 54.8	- 7 25.9	+0.0865	.5483	.2411	+48	-34
o Arietis	6	0.74	1.5	14 46.6	21 2 4.4	- 2 27.1	+1.0067	.5497	.2333	+90	+17
π Arietis, *mult.*	5½	0.74	2.4	16 56.4	4 7.9	- 0 27.9	-0.7070	.5503	.2299	+ 6	-73
*ρ*² Arietis	6	0.71	2.9	17 49.3	6 59.2	+ 2 17.4	-0.9526	.5513	.2250	- 9	-72
*ρ*³ Arietis	6	0.71	2.8	17 31.2	7 14.9	+ 2 32.5	-0.5887	.5513	.2247	+12	-69
53 Arietis	6	-0.64	+3.1	+17 23.6	12 4.9	+ 7 12.3	+0.6053	.5530	+.2160	+84	- 5
54 Arietis	6½	0.65	3.5	18 18.6	12 27.8	+ 7 34.4	-0.2464	.5531	.2150	+31	-48
δ Arietis	4½	0.64	3.9	19 15.0	13 52.2	+ 8 55.8	-0.9018	.5535	.2127	- 6	-71
B. A. C. 1032	6½	0.59	4.5	20 3.2	17 52.5	-11 12.4	-0.8865	.5549	.2050	- 6	-70
*τ*² Arietis	5½	0.58	4.6	20 17.5	18 41.6	-10 25.1	-0.9632	.5551	.2031	-11	-70
65 Arietis	6	0.57	4.7	20 21.3	19 25.0	- 9 43.1	-0.8831	.5556	.2018	- 6	-70
B. A. C. 1143	6	-0.45	+5.3	+20 31.7	22 4 1.4	- 1 25.3	+0.6026	.5587	+.1843	+85	- 1
32 Tauri	6	0.38	6.1	22 6.9	9 16.5	+ 3 38.3	-0.0908	.5603	.1729	+39	-35
33 Tauri	6	0.39	6.4	22 48.6	9 20.9	+ 3 42.5	-0.7940	.5605	.1728	- 1	-67
36 Tauri	6	0.31	6.9	23 45.6	12 25.2	+ 6 40.2	-1.2557	.5616	.1652	-40	-66
A¹ Tauri	4½	0.33	6.2	21 44.2	12 36.0	+ 6 50.5	+0.8602	.5616	.1649	+90	+16
A² Tauri	6	0.33	6.2	21 40.1	12 52.0	+ 7 6.0	+0.9752	.5616	.1644	+90	+23
62 Tauri	6	-0.22	+7.3	+24 0.5	20 41.2	- 9 22.0	-0.2284	.5642	+.1458	+31	-40
B. A. C. 1518	6	0.01	7.9	24 23.4	23 10 7.6	+ 3 34.4	+1.1112	.5677	.1119	+90	+39
k Tauri	5½	0.00	8.1	24 51.4	10 54.0	+ 4 19.0	+0.7101	.5679	.1098	+90	+13
B. A. C. 1746	6½	+0.25	9.1	27 34.9	24 2 25.6	- 4 44.4	-0.7677	.5699	.0673	- 1	-63
125 Tauri	6	0.27	8.5	25 49.6	4 2.3	- 3 11.4	+1.1863	.5700	.0634	+90	+50
136 Tauri	5	0.37	9.0	27 34.9	9 35.5	+ 2 9.3	-0.3567	.5700	.0476	+24	-39
B. A. C. 2097	6½	+0.61	+8.7	+28 17.7	25 0 52.8	- 7 7.9	-0.7109	.5683	+.0052	+ 3	-61
49 Aurigae	5½	0.64	8.5	28 7.2	2 53.6	- 5 11.6	-0.5214	.5679	-.0004	+14	-45
54 Aurigae	6	0.67	8.5	28 22.5	4 41.9	- 3 27.4	-0.7974	.5675	.0055	- 3	-62
47 Geminor.	6	0.85	7.3	27 3.8	18 5.9	+ 9 26.8	+0.2848	.5634	.0414	+61	- 4
53 Geminor.	6	0.88	7.5	28 7.0	20 0.6	+11 17.4	-0.9296	.5626	.0466	-12	-62
59 Geminor.	6½	0.93	7.1	27 52.9	23 40.9	- 9 10.3	-0.8680	.5611	.0566	- 7	-62
ι Geminorum	4	+0.94	+7.1	+28 2.9	26 0 11.3	- 8 41.1	-1.0767	.5608	-.0576	-24	-62
υ Geminorum	4½	0.98	6.6	27 10.5	4 35.0	- 4 26.9	-0.4178	.5589	.0692	+20	-44
c Geminorum	6	1.01	6.0	26 5.0	8 9.2	- 1 0.4	+0.4962	.5571	.0778	+77	+ 4
φ Geminorum	5	1.07	5.9	27 5.5	12 13.4	+ 2 55.1	-0.9300	.5550	.0878	-12	-63
*ω*¹ Cancri	6	1.09	5.3	25 44.2	15 31.1	+ 6 5.8	+0.2297	.5527	.0962	+58	-11
*ω*² Cancri	6½	1.09	5.1	25 26.1	15 52.8	+ 6 26.8	+0.5217	.5527	.0968	+79	+ 3
*ψ*¹ Cancri	6½	+1.14	+5.0	+26 12.9	19 37.4	+10 3.5	-0.7011	.5504	-.1057	+ 4	-64
*ψ*² Cancri	6	1.13	4.9	25 53.3	19 44.4	+10 10.3	-0.3607	.5504	.1059	+24	-43
λ Cancri	6	1.15	4.1	24 25.1	27 0 16.9	- 9 26.7	+0.7293	.5482	.1158	+90	+13
*υ*¹ Cancri, *mult.*	7	1.19	4.0	24 56.7	3 2.3	- 6 46.9	-0.1713	.5460	.1222	+34	-35
*υ*² Cancri	6½	1.19	3.8	24 33.7	3 55.7	- 5 55.3	+0.1352	.5454	.1242	+52	-19
*υ*³ Cancri	6	+1.20	+3.7	+24 30.3	5 15.0	- 4 38.7	+0.0312	.5448	-.1269	+45	-25

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. $\Delta\alpha$	Red'ns from 1874.0. $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
FEBRUARY.											
32 Cancri	6	+1.21	+3.6	+24 30.8	27 5 55.7	− 3 58.4	−0.0639	.5441	−.1285	+40	−30
ξ Cancri	5	1.30	1.5	22 33.2	22 54.6	−11 34.3	−0.4065	.5328	.1288	+21	−52
79 Cancri	6	1.30	1.4	22 30.4	23 23.1	−11 6.8	−0.4318	.5324	.1633	+20	−53
B. A. C. 3138	6	1.30	+1.1	21 48.1	28 0 57.8	− 9 35.1	+0.0797	.5314	.1658	+48	−27
B. A. C. 3292	6½	+1.35	−0.3	+20 51.9	13 17.7	+ 2 21.4	−1.0725	.5232	−.1862	−19	−69
MARCH.											
η Leonis	3½	+1.35	−2.2	+17 22.5	1 3 39.7	− 7 42.8	−0.0673	.5139	−.2068	+40	−40
42 Leonis	6	1.34	3.0	15 36.5	11 11.6	− 0 24.3	+0.2875	.5095	.2157	+60	−23
B. A. C. 3579	6	1.34	3.4	14 59.1	14 51.5	+ 3 9.2	+0.1775	.5072	.2198	+54	−29
i Leonis	6	1.34	3.6	14 46.9	16 38.7	+ 4 53.2	+0.0075	.5062	.2217	+44	−38
ν Virginis	4½	1.23	7.1	7 14.0	3 9 4.8	− 3 47.9	−1.2639	.4893	.2500	−30	−83
B. A. C. 3996	6	1.21	7.2	5 53.5	10 55.7	− 2 0.0	−0.2392	.4890	.2507	+32	−56
b Virginis	6	+1.18	−7.5	+ 4 21.3	17 3.8	+ 3 58.3	−0.0769	.4875	−.2526	+40	−47
10 Virginis	6	1.15	7.7	+ 2 36.2	22 36.4	+ 9 22.1	+0.4657	.4866	.2539	+71	−20
γ Virg., *mult.*	2½	1.06	8.5	− 0 45.6	4 16 55.8	+ 3 12.5	−0.4621	.4853	.2546	+20	−71
B. A. C. 4277	6	1.06	8.6	0 53.1	18 0.6	+ 4 15.6	−0.5981	.4853	.2546	+13	−82
38 Virginis	6	1.02	8.6	2 52.2	23 29.2	+ 9 35.5	+0.2158	.4855	.2538	+55	−33
k Virginis	6	1.01	8.8	3 8.1	5 3 9.7	−10 49.9	−0.4224	.4857	.2531	+22	−68
46 Virginis	6	+1.01	−8.9	− 2 41.6	3 42.0	−10 18.4	−1.0493	.4858	−.2529	−13	−90
48 Virginis	6	1.00	8.9	2 59.2	5 35.1	− 8 28.4	−1.1984	.4862	.2524	−24	−90
θ Virginis	4½	0.97	8.7	4 52.1	9 0.4	− 5 8.4	+0.0295	.4865	.2514	+45	−42
m Virginis	6	0.87	9.0	8 4.1	6 2 49.1	−11 48.4	−0.8314	.4905	.2435	− 2	−90
B. A. C. 4591	6	0.84	8.9	9 4.8	5 55.1	− 8 47.5	−0.4629	.4915	.2417	+18	−71
λ Virginis	4½	0.74	8.7	12 47.5	23 18.6	+ 8 7.2	−0.4478	.4985	.2287	+17	−71
5 Libræ	6	+0.63	−8.6	−14 55.8	7 13 30.4	− 2 5.4	−1.2340	.5062	−.2142	−35	−90
α^1 Libræ	6	0.61	8.5	15 28.5	15 57.4	+ 0 17.2	−1.1545	.5076	.2115	−29	−90
α^2 Libræ	2½	0.61	8.5	15 31.1	16 3.3	+ 0 23.0	−1.1267	.5077	.2115	−26	−90
B. A. C. 4896	6	0.60	7.9	17 16.0	16 22.8	+ 0 41.9	+0.7286	.5080	.2109	+73	− 5
ι^1 Libræ	4½	0.52	7.6	19 18.9	8 2 52.8	+10 53.2	+0.8295	.5146	.1977	+71	+ 2
ι^2 Libræ	5½	0.51	7.7	19 10.4	3 26.3	+11 25.6	+0.5639	.5151	.1968	+66	−14
B. A. C. 5109	6	+0.44	−7.9	−19 14.5	13 0.6	− 3 17.8	−1.1798	.5218	−.1831	−35	−90
δ Scorpii	2½	0.31	7.2	22 15.8	9 2 15.8	+ 9 32.1	−0.1635	.5317	.1609	+22	−53
B. A. C. 5335	6½	0.29	6.9	23 16.1	4 57.0	−11 51.9	+0.5028	.5337	.1559	+57	−16
B. A. C. 5354	6½	0.28	6.9	23 21.4	6 10.3	−10 40 8	+0.4104	.5347	.1536	+51	−21
19 Scorpii	6	0.23	6.8	23 51.9	11 39.8	− 5 22.4	+0.1463	.5390	.1427	+36	−36
ρ Ophi., *mult.*	5	0.21	7.1	23 9.4	13 56.5	− 3 10.3	−0.9402	.5407	.1383	−23	−90
22 Scorpii	5	+0.18	−6.6	−24 50.2	16 0.1	− 1 11.0	+0.5965	.5424	−.1341	+60	−11
25 Scorpii	6	0.11	6.5	25 18.1	23 27.0	+ 6 0.6	+0.1563	.5481	.1171	+34	−35
18 Ophiuchi	6	0.10	6.9	24 25.1	10 0 45.0	+ 7 15.8	−0.9443	.5490	.1150	−26	−90
B. A. C. 5641	6½	0.09	6.8	24 37.0	1 27.5	+ 7 56.9	−0.8119	.5498	.1132	−18	−90
B. A. C. 5709	6	0.05	6.8	24 54.1	5 13.6	+11 35.0	−0.9143	.5524	.1050	−25	−90
26 Ophiuchi	6	+0.05	6.8	24 47.8	5 18.6	+11 39.8	−1.0359	.5524	.1048	−33	−90
B. A. C. 5800	6½	−0.01	−6.2	−26 50.0	11 21.5	− 6 30.2	+0.5567	.5563	−.0910	+54	−12
A^1 Ophiuchi	5	0.01	6.4	26 25.0	11 52.8	− 6 0.0	+0.0656	.5573	.0888	+26	−40
A^2 Ophiuchi	6	0.02	6.4	26 25.0	11 52.8	− 6 0.0	+0.0645	.5573	.0888	+26	−40
38 Ophiuchi	6½	0.03	6.4	26 29.3	12 50.1	− 5 4.8	+0.0591	.5617	.0869	+25	−40
B. A. C. 5909	6½	0.09	6.6	26 10.4	18 49.5	+ 0 41.5	−0.7497	.5664	.0712	−19	−90
3 Sagittarii	5	0.16	6.1	27 46.9	11 1 24.6	+ 7 1.9	+0.5487	.5666	.0536	+50	−13
B. A. C. 6024	6½	−0.17	−6.4	−27 1.2	2 35.5	+ 8 10.2	−0.3214	.5673	−.0505	+ 2	−64
B. A. C. 6063	6½	0.20	6.1	28 2.7	5 11.6	+10 40.4	+0.6421	.5686	.0438	+57	− 7
B. A. C. 6120	6½	0.24	6.0	28 22.3	9 19.4	− 9 21.1	+0.8274	.5708	.0325	+62	+ 5
B. A. C. 6127	5	0.25	6.0	28 28.2	9 51.2	− 8 50.6	+0.9156	.5712	.0306	+62	+11
B. A. C. 6190	6½	−0.29	−6.0	−28 41.5	13 38.6	− 5 11.8	+1.0505	.5732	−.0198	+62	+22

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6191	6½	−0.29	−6.1	−28 19.6	11 13 39.0	− 5 11.4	+0.6654	.5732	−.0198	+57	− 5
B. A. C. 6194	6	0.29	6.5	27 5.3	13 57.2	− 4 53.9	−0.6434	.5732	.0192	−17	−90
B. A. C. 6220	6½	0.31	6.1	28 29.4	15 31.2	− 3 23.5	+0.8037	.5741	−.0143	+62	+ 3
φ Sagittarii	3½	0.41	6.7	27 7.2	12 1 4.4	+ 5 47.5	−0.6386	.5780	+.0131	−18	−90
γ Sagittarii	2½	0.44	7.0	26 27.2	4 55.8	+ 9 29.9	−1.2586	.5793	.0246	−61	−90
τ Sagittarii	3½	0.49	6.6	27 51.2	9 32.8	−10 4.0	+0.3452	.5806	.0386	+37	−24
B. A. C. 6628	6	−0.56	−6.6	−28 6.5	16 30.0	− 3 23.2	+0.9447	.5818	+.0595	+62	+13
B. A. C. 6666	6	0.58	6.9	27 14.6	18 38.4	− 1 19.9	+0.1844	.5821	.0657	+30	−33
ω Sagittarii	5	0.67	7.2	26 38.0	13 4 54.5	+ 4 31.8	+0.3850	.5826	.0958	+44	−22
A Sagittarii	5	0.69	7.3	26 32.2	6 9.2	+ 5 43.5	+0.4068	.5825	.0993	+45	−21
B. A. C. 7077	6	0.80	7.7	25 22.2	19 38.1	− 1 19.4	+0.8160	.5806	.1381	+65	+ 3
B. A. C. 7108	6½	0.81	7.7	25 32.7	21 36.9	+ 0 34.7	+1.2709	.5804	.1435	+65	+45
B. A. C. 7197	6	−0.84	−8.3	−23 11.8	14 1 51.7	+ 4 39.6	−0.4723	.5792	+.1548	+ 4	−75
B. A. C. 7237	6	0.86	8.0	24 15.3	3 42.5	+ 6 26.1	+0.8863	.5786	.1598	+66	+ 7
χ Capricorni	6	0.90	8.6	21 42.0	10 0.9	−11 30.2	−0.6281	.5768	.1757	− 2	−89
27 Capricorni	6	0.90	8.8	21 3.8	10 25.2	−11 6.6	−1.1973	.5766	.1771	−39	−90
φ Capricorni	5½	0.92	8.7	21 10.5	12 53.2	− 8 44.5	−0.6393	.5758	.1828	− 2	−90
33 Capricorni	5½	0.94	8.7	21 23.3	16 21.1	− 5 23.6	+0.2226	.5747	.1908	+44	−32
35 Capricorni	6	−0.94	−8.6	−21 44.5	17 36.6	− 4 12.0	+0.8185	.5743	+.1943	+69	+ 2
37 Capricorni	6	0.96	8.8	20 38.8	20 44.2	− 1 11.6	+0.3415	.5732	.2014	+51	−25
ε Capricorni	4½	0.97	8.9	20 1.9	21 39.3	− 0 18.5	−0.0869	.5727	.2034	+29	−49
κ Capricorni	5	0.98	9.0	19 26.5	23 56.9	+ 1 53.8	−0.2027	.5717	.2083	+23	−56
B. A. C. 7550	6	0.98	8.9	20 11.9	15 0 10.4	+ 2 6.8	+0.5988	.5717	.2088	+66	−11
29 Aqua., *mult.*	6	1.03	9.2	17 34.4	8 10.5	+ 9 48.8	−0.2740	.5686	.2254	+22	−60
56 Aquarii	6	−1.07	−9.3	−15 13.9	19 54.1	− 2 53.6	+0.1809	.5638	+.2465	+47	−34
96 Piscium	6½	1.19	4.3	+ 6 38.5	19 2 18.6	+ 0 44.8	+0.6428	.5517	.2801	+86	−10
B. A. C. 481	6½	1.17	4.0	6 59.9	5 23.2	+ 3 43.0	+1.1505	.5523	.2773	+90	+22
ο Piscium	4	1.17	3.4	8 31.3	9 28.2	+ 7 39.4	+0.7800	.5530	.2735	+90	− 1
54 Ceti	6	1.18	2.8	10 25.0	11 51.3	+ 9 57.4	−0.4366	.5535	.2711	+21	−66
MARS				11 9.4	13 35.6	+11 38.0	−0.6966	.5264	.2589	+ 8	−79
B. A. C. 609	6	−1.17	−2.2	+11 41.0	15 34.6	−10 27.2	−0.6836	.5545	+.2668	+ 9	−78
29 Arietis	6½	1.10	−0.2	14 28.5	20 6 0.5	+ 3 27.8	+0.2687	.5583	.2471	+59	−25
ο Arietis	6	1.06	+0.3	14 46.6	10 59.0	+ 8 15.5	+1.1790	.5600	.2388	+90	+30
π Arietis, *mult.*	5½	1.07	1.0	16 56.4	12 58.1	+10 10.2	−0.5033	.5608	.2353	+17	−64
ρ^2 Arietis	6	1.06	1.5	17 49.2	15 43.1	−11 10.8	−0.7420	.5617	.2303	+ 4	−71
ρ^3 Arietis	6	1.05	1.5	17 31.2	15 58.3	−10 56.2	−0.3841	.5618	.2300	+24	−57
53 Arietis	6	−1.00	+1.9	+17 23.6	20 37.7	− 6 26.9	+0.7940	.5636	+.2210	+90	+ 6
54 Arietis	6½	1.01	2.1	18 18.6	20 59.9	− 6 5.6	−0.0426	.5636	.2205	+42	−38
δ Arietis	4½	1.00	2.5	19 15.0	22 21.1	− 4 47.4	−0.6864	.5636	.2180	+ 7	−71
B. A. C. 1032	6½	0.97	3.1	20 3.1	21 2 12.6	− 1 4.4	−0.6683	.5653	.2099	+ 8	−70
τ^1 Arietis	5	0.98	3.3	20 41.5	2 21.1	− 0 56.3	−1.2814	.5655	.2098	−39	−70
τ^2 Arietis	5½	0.97	3.2	20 17.4	3 0.0	− 0 18.8	−0.7428	.5655	.2082	+ 3	−69
65 Arietis	6	−0.96	+3.3	+20 21.3	3 41.8	+ 0 21.5	−0.6636	.5658	+.2065	+ 8	−69
B. A. C. 1143	6	0.86	4.1	20 31.7	11 59.8	+ 8 20.8	+0.8024	.5687	.1883	+90	+10
32 Tauri	6	0.81	5.0	22 6.9	17 3.8	−10 46.7	+0.1229	.5703	.1764	+51	−24
33 Tauri	6	0.82	5.2	22 48.5	17 8.0	−10 42.6	−0.5689	.5703	.1762	+13	−62
36 Tauri	6	0.79	5.7	23 45.6	20 6.0	− 7 51.4	−1.0221	.5711	.1690	−16	+66
A^1 Tauri	4½	0.76	5.2	21 44.2	20 16.3	− 7 41.4	+1.0600	.5712	.1687	+90	+29
A^2 Tauri	6	−0.76	+5.2	+21 40.1	20 31.9	− 7 26.4	+1.1733	.5716	+.1676	+90	+39
62 Tauri	6	0.68	6.4	24 0.5	22 4 5.3	− 0 10.3	−0.0093	.5732	.1487	+43	−28
k Tauri	5½	0.48	7.6	24 51.3	17 51.4	−10 56.0	+0.9173	.5757	.1113	+90	+25
B. A. C. 1648	6½	0.35	9.0	27 49.8	23 2 57.5	− 2 11.0	−1.2586	.5766	.0856	−47	−62
B. A. C. 1746	6½	0.24	9.1	27 34.9	8 57.6	+ 3 35.2	−0.5424	.5762	.0683	+13	−51
136 Tauri	5	−0.12	+9.2	+27 34.9	15 57.3	+10 18.6	−0.1387	.5756	+.0481	+36	−26

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

Star's—						At Conjunction in R. A.								Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. $\Delta\alpha$	Red'ns from 1874.0. $\Delta\delta$	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x'	y'	N'n.	S'n.
		s	″	°	′	d	h	m	h	m				°	°
B. A. C. 2097	6½	+0.14	+ 9.5	+28	17.7	24	6	56.3	+ 0	43.0	−0.4957	.5721	+.0047	+16	−43
49 Aurigæ	5½	0.17	9.4	28	7.2		8	55.1	+ 2	37.3	−0.3090	.5714	−.0010	+26	−31
54 Aurigæ	6	0.20	9.4	28	22.5		10	41.6	+ 4	19.8	−0.5838	.5708	.0062	+11	−50
47 Geminor.	6	0.42	8.5	27	3.8		23	54.6	− 6	57.0	+0.4825	.5651	.0427	+77	+ 7
53 Geminor.	6	0.46	8.8	28	7.0	25	1	48.1	− 5	7.7	−0.7251	.5640	.0481	+ 2	−62
59 Geminor.	6½	0.51	8.5	27	52.9		5	26.2	− 1	37.6	−0.6670	.5620	.0578	+ 6	−59
ι Geminorum	4	+0.52	+ 8.6	+28	2.9		5	56.3	− 1	8.7	−0.8748	.5618	−.0588	− 8	−62
b^3 Geminorum	5	0.55	8.5	28	10.6		7	39.9	+ 0	31.1	−1.1176	.5607	.0634	−28	−62
B. A. C. 2472	6	0.56	8.5	28	10.7		8	1.6	+ 0	52.0	−1.1439	.5605	0641	−31	−62
υ Geminorum	4½	0.58	8.0	27	10.5		10	17.8	+ 3	3.3	−0.2232	.5594	.0698	+31	−32
c Geminorum	6	0.63	7.5	26	5.0		13	50.5	+ 6	28.2	+0.6837	.5572	.0791	+90	+14
ϕ Geminorum	5	0.70	7.5	27	5.5		17	53.1	+10	22.2	−0.7391	.5545	.0890	+ 2	−63
ω^1 Cancri	6	+0.73	+ 6.9	+25	44.3		21	9.9	−10	28.0	+0.4129	.5523	−.0968	+71	− 2
ω^2 Cancri	6½	0.73	6.7	25	26.1		21	31.5	−10	7.1	+0.7034	.5521	.0980	+90	+13
ψ^1 Cancri	6½	0.79	6.7	26	12.9	26	1	15.3	− 6	31.2	−0.5183	.5497	.1062	+15	−53
ψ^2 Cancri	6	0.79	6.6	25	53.4		1	22.2	− 6	24.5	−0.1791	.5493	.1072	+34	−34
λ Cancri	6	0.84	5.8	24	25.1		5	54.0	− 2	2.2	+0.9032	.5465	.1171	+90	+23
υ^1 Cancri, *mult.*	7	0.88	5.7	24	56.8		8	39.2	+ 0	37.3	+0.0028	.5443	.1232	+44	−12
υ^2 Cancri	6½	+0.88	+ 5.5	+24	33.8		9	32.5	+ 1	28.9	+0.3075	.5436	−.1252	+63	−11
υ^3 Cancri	6	0.90	5.4	24	30.3		10	51.7	+ 2	45.4	+0.2026	.5429	.1279	+56	−16
32 Cancri	6	0.91	5.4	24	30.8		11	32.5	+ 3	24.7	+0.1069	.5410	.1292	+50	−21
ξ Cancri	5	1.08	3.3	22	33.3	27	4	32.8	− 4	8.7	−0.2540	.5303	.1629	+30	−44
79 Cancri	6	1.09	3.2	22	30.4		5	1.3	− 3	41.2	−0.2796	.5421	.1635	+28	−45
B. A. C. 3138	6	1.09	2.9	21	48.1		6	36.4	− 2	9.1	+0.2293	.5286	.1663	+57	−19
B. A. C. 3292	6½	+1.20	+ 1.4	+20	52.0		18	59.5	+ 9	50.6	−0.9386	.5200	−.1868	− 9	−69
η Leonis	3½	1.26	− 0.8	17	22.5	28	9	26.6	− 0	8.5	+0.0464	.5104	.2071	+46	−34
42 Leonis	6	1.29	1.9	15	36.6		17	1.5	+ 7	13.0	+0.3900	.5062	.2160	+67	−18
B. A. C. 3579	6	1.30	2.4	14	59.1		20	42.9	+10	48.0	+0.2740	.5042	.2202	+60	−24
i Leonis	6	1.31	2.6	14	46.9		22	30.8	−11	27.3	+0.1012	.5029	.2221	+50	−33
ν Virginis	4½	1.38	7.3	7	14.0	30	15	11.3	+ 4	6.0	−1.2405	.4878	.2509	−27	−83
B. A. C. 3996	6	+1.37	− 7.6	+ 5	53.5		17	2.7	+ 5	54.4	−0.2174	.4873	−.2516	+33	−55
b Virginis	6	1.37	8.1	4	21.3		23	12.3	+11	54.3	−0.0660	.4863	.2537	+41	−47
10 Virginis	6	1.36	8.7	+ 2	36.2	31	4	45.8	− 6	41.0	+0.4676	.4855	.2550	+72	−20
γ Virg., *mult.*	2½	+1.36	−10.0	− 0	45.7		23	7.3	+11	11.4	−0.4915	.4851	−.2563	+19	−73

APRIL.

Name.	Mag.	$\Delta\alpha$	$\Delta\delta$	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x'	y'	N'n.	S'n.
B. A. C. 4277	6	+1.36	−10.0	− 0	53.2	1	0	12.1	−11	45.5	−0.6291	.4852	−.2561	+12	−84
38 Virginis	6	1.35	10.3	2	52.3		5	40.8	− 6	25.5	+0.1761	.4855	.2554	+53	−35
k Virginis	6	1.35	10.5	3	8.1		9	21.2	− 2	50.9	−0.4681	.4860	.2548	+20	−72
46 Virginis	6	1.35	10.6	2	41.6		9	53.5	− 2	19.4	−1.0955	.4860	.2546	−16	−90
48 Virginis	6	1.35	10.7	2	59.3		11	46.5	− 0	29.4	−1.2474	.4864	.2542	−28	−90
θ Virginis	4½	1.34	10.8	4	52.1		15	11.7	+ 2	50.3	−0.0249	.4870	.2532	+42	−45
m Virginis	6	+1.31	−11.4	− 8	4.2	2	8	58.8	− 3	51.3	−0.9116	.4918	−.2455	− 6	−90
B. A. C. 4591	6	1.30	11.4	9	4.8		12	4.4	− 0	50.7	−0.5471	.4927	.2328	+13	−78
λ Virginis	4½	1.26	11.4	12	47.6	3	5	25.5	− 7	58.5	−0.5525	.5001	.2303	+11	−79
5 Libræ	6	1.23	11.3	14	55.8		19	35.6	+ 5	47.2	−1.3546	.5076	.2158	−51	−90
α^1 Libræ	6	1.22	11.3	15	28.5		22	2.4	+ 8	9.7	−1.2770	.5087	.2131	−40	−90
α^2 Libræ	2½	1.22	11.3	15	31.2		22	8.3	+ 8	15.4	−1.2494	.5088	.2130	−37	−90
B. A. C. 4896	6	+1.22	−11.0	−17	16.1		22	27.8	+ 8	34.4	+0.6088	.5093	−.2124	+70	−12
ι^1 Libræ	4½	1.18	10.6	19	19.0	4	8	57.4	− 5	14.8	+0.7021	.5156	.1990	+71	− 6
ι^2 Libræ	5½	1.18	10.6	19	10.5		9	30.8	− 4	42.4	+0.4356	.5161	.1980	+58	−21
B. A. C. 5109	6	1.14	10.6	19	14.6		19	5.5	+ 4	34.6	−1.3198	.5223	.1840	−52	−90
δ Scorpii	2½	1.09	9.7	22	15.8	5	8	23.0	− 6	33.2	−0.3066	.5317	.1610	+15	−62
B. A. C. 5335	6½	+1.08	− 9.5	−23	16.1		11	4.9	− 3	56.6	+0.3618	.5333	−.1563	+49	−24

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 5354	6½	+1.07	−9.4	−23 21.5	5 12 18.7	− 2 45.1	+0.2685	.5341	−.1541	+43	−29
19 Scorpii	6	1.04	9.1	23 51.9	17 49.9	+ 2 35.1	+0.0013	.5381	.1431	+28	−44
ρ Ophi., *mult.*	5	1.02	9.3	23 9.4	20 7.6	+ 4 48.2	−1.0924	.5396	.1386	−33	−90
22 Scorpii	5	1.02	8.8	24 50.2	22 12.0	+ 6 48.4	+0.4531	.5410	.1343	+51	−19
25 Scorpii	6	0.97	8.4	25 18.1	6 5 42.8	− 9 56.1	+0.0088	.5461	.1178	+26	−44
18 Ophiuchi	6	0.95	8.6	24 25.1	7 1.5	− 8 40.1	−1.1005	.5470	.1150	−37	−90
B. A. C. 5641	6½	+0.95	−8.6	−24 37.0	7 44.5	− 7 58.7	−0.9672	.5474	−.1132	−27	−90
B. A. C. 5709	6	0.92	8.4	24 54.1	11 33.0	− 4 18.1	−1.0710	.5500	.1044	−36	−90
26 Ophiuchi	6	0.92	8.4	24 47.8	11 38.0	− 4 13.2	−1.1940	.5502	.1042	−47	−90
B. A. C. 5800	6½	0.88	7.6	26 50.0	17 45.3	+ 1 41.1	+0.4115	.5539	.0897	+45	−21
A¹ Ophiuchi	5	0.77	7.7	26 25.0	18 17.1	+ 2 11.7	−0.0842	.5540	.0888	+18	−49
A² Ophiuchi	6	0.88	7.7	26 25.0	18 17.1	+ 2 11.8	−0.0852	.5540	.0888	+18	−49
38 Ophiuchi	6½	+0.87	−7.6	−26 29.4	19 15.2	+ 3 7.8	−0.0911	.5550	−.0863	+17	−49
B. A. C. 5909	6½	0.82	7.5	26 10.4	7 1 19.9	+ 8 59.3	−0.9072	.5581	.0712	−28	−90
3 Sagittarii	5	0.77	6.7	27 46.9	8 1.4	− 8 33.7	+0.4038	.5616	.0536	+41	−21
B. A. C. 6024	6½	0.75	6.9	27 1.2	.9 13.6	− 7 24.2	−0.4749	.5621	.0506	− 6	−76
B. A. C. 6063	6½	0.73	6.5	28 2.8	11 52.5	− 4 51.1	+0.4988	.5634	.0432	+46	−16
B. A. C. 6072	6½	0.73	6.2	28 44.4	12 40.3	− 4 5.1	+1.2073	.5639	.0409	+61	+39
B. A. C. 6120	6½	+0.69	−6.2	−28 22.3	16 5.2	− 0 47.8	+0.6872	.5653	−.0319	+59	− 4
B. A. C. 6127	5	0.69	6.1	28 28.2	16 37.6	− 0 16.6	+0.7766	.5655	.0303	+62	+ 1
B. A. C. 6190	6½	0.65	5.9	28 41.5	20 29.8	+ 3 26.9	+0.9139	.5671	.0193	+62	+11
B. A. C. 6191	6½	0.65	6.0	28 19.6	20 30.1	+ 3 27.3	+0.5244	.5671	.0193	+46	−14
B. A. C. 6194	6	0.64	6.4	27 5.3	20 48.8	+ 3 45.3	−0.8000	.5673	.0188	−26	−90
B. A. C. 6220	6½	0.63	5.9	28 29.4	22 24.8	+ 5 17.6	+0.6648	.5678	−.0140	+57	− 6
φ Sagittarii	3½	+0.52	−5.9	−27 7.2	8 8 11.5	− 9 17.7	−0.7934	.5706	+.0130	−26	−90
τ Sagittarii	3½	0.43	5.3	27 51.2	16 53.2	− 0 56.0	+0.2060	.5723	.0381	+29	−32
B. A. C. 6628	6	0.37	4.8	28 6.5	9 0 2.2	+ 5 56.7	+0.8170	.5729	.0585	+62	+ 4
B. A. C. 6666	6	0.38	5.0	27 14.6	2 14.4	+ 8 3.8	+0.0466	.5729	.0645	+22	−41
ω Sagittarii	5	0.20	4.8	26 38.0	12 49.5	− 5 45.4	+0.2549	.5725	.0948	+36	−29
b Sagittarii	5	0.20	4.5	27 30.2	13 16.3	− 5 19.7	+1.2028	.5725	.0957	+63	+37
A Sagittarii	5	+0.19	−4.8	−26 32.1	14 6.6	− 4 31.3	+0.2776	.5725	+.0982	+38	−28
B. A. C. 7077	6	+0.02	4.6	25 22.1	10 4 2.4	+ 8 52.7	+0.7013	.5700	.1357	+65	− 5
B. A. C. 7108	6½	0.00	4.4	25 32.6	6 5.3	+10 50.9	+1.1644	.5695	.1412	+65	+30
B. A. C. 7197	6	−0.06	5.0	23 11.8	10 28.9	− 8 55.4	−0.6032	.5683	.1528	− 2	−86
B. A. C. 7237	6	0.07	4.6	24 15.3	12 23.5	− 7 5.0	+0.7780	.5678	.1578	+66	0
χ Capricorni	6	0.15	5.1	21 42.0	18 55.0	− 0 48.1	−0.7556	.5659	.1733	− 9	−90
φ Capricorni	5½	−0.19	−5.2	−21 10.5	21 53.4	+ 2 3.5	−0.7645	.5648	+.1802	− 9	−90
33 Capricorni	5½	0.23	5.0	21 23.2	11 1 28.5	+ 5 30.7	+0.1137	.5636	.1886	+38	−38
35 Capricorni	6	0.24	4.8	21 44.5	2 46.5	+ 6 45.8	+0.7198	.5634	.1914	+68	− 5
37 Capricorni	6	0.27	5.0	20 38.8	6 0.5	+ 9 52.7	+0.2382	.5622	.1983	+45	−31
ε Capricorni	4½	0.29	5.1	20 1.8	6 57.6	+10 47.7	−0.1790	.5618	.2004	+24	−55
κ Capricorni	5	0.31	5.2	19 26.5	9 19.9	−10 55.2	−0.3112	.5612	.2052	+18	−62
B. A. C. 7550	6	−0.31	−5.0	−20 11.9	9 33.8	−10 41.8	+0.5022	.5608	+.2061	+61	−17
29 Aqua., *mult.*	6	0.41	5.4	17 34.3	17 49.9	− 2 43.7	−0.3754	.5581	.2224	+17	−66
56 Aquarii	6	0.53	5.2	15 13.8	12 5 55.8	+ 8 56.2	+0.0985	.5544	.2436	+43	−39
τ² Aquarii	4	0.60	5.3	14 15.5	14 24.6	− 6 53.0	+1.2454	.5517	.2564	+76	+30
74 Aquarii	6	0.63	5.7	12 17.3	16 8.2	− 5 13.0	−0.2711	.5514	.2584	+26	−59
ψ¹ Aquarii	4½	0.71	5.7	9 46.5	13 2 3.8	+ 4 21.7	−0.1362	.5493	.2703	+34	−51
χ Aquarii	5½	−0.73	−6.0	− 8 24.9	2 31.2	+ 4 48.2	−1.3596	.5489	+.2710	−44	−90
ψ² Aquarii	4	0.72	5.7	9 52.3	2 58.9	+ 5 14.9	+0.2081	.5489	.2713	+53	−33
ψ³ Aquarii	5	0.72	5.6	10 18.0	3 26.9	+ 5 41.9	+0.7589	.5489	.2720	+77	− 4
B. A. C. 8214	6½	0.78	5.6	8 9.8	10 51.3	−11 9.0	+0.6845	.5478	.2787	+82	− 9
B. A. C. 8274	6	0.82	5.4	7 4.9	16 40.8	− 5 31.6	+1.2529	.5474	.2830	+83	+29
24 Piscium	6½	−0.86	−5.8	− 3 51.3	18 39.1	− 3 37.5	−1.3655	.5471	+.2842	−42	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
27 Piscium	5½	-0.87	-5.6	- 4 15.4	13 21 14.0	- 1 7.8	-0.2339	.5471	+.2852	+31	-57
29 Piscium	5½	0.88	5.6	3 43.8	22 38.6	+ 0 13.8	-0.3489	.5470	.2863	+26	-64
4 Ceti	6	0.90	5.5	3 15.0	14 1 17.6	+ 2 47.4	-0.0597	.5470	.2874	+40	-47
5 Ceti	6	0.90	5.5	3 9.0	1 30.2	+ 2 59.5	-0.0988	.5470	.2877	+38	-49
B. A. C. 5	6	0.90	-5.5	- 2 55.4	1 44.2	+ 3 13.0	-0.2532	.5470	.2876	+31	-58
δ Arietis	4½	1.16	+1.6	+19 14.9	17 8 48.5	+ 7 28.2	-0.6143	.5690	.2205	+11	-68
τ^2 Arietis	5½	-1.14	+2.2	+20 17.4	13 20.4	+11 49.7	-0.6657	.5707	+.2111	+ 8	-69
65 Arietis	6	1.14	2.3	20 21.3	14 1.0	-11 31.2	-0.5903	.5740	.2105	+12	-66
B. A. C. 1143	6	1.08	3.2	20 31.7	22 5.4	- 3 45.5	+0.8630	.5777	.1920	+90	+14
32 Tauri	6	1.06	4.0	22 6.8	18 3 0.6	+ 0 58.2	+0.1950	.5797	.1799	+55	-21
33 Tauri	6	1.07	4.1	22 48.5	3 4.7	+ 1 2.1	-0.4873	.5797	.1798	+17	-57
36 Tauri	6	1.05	4.6	23 45.5	5 57.3	+ 3 48.0	-0.9330	.5809	.1724	- 9	-66
A^1 Tauri	4½	-1.03	+4.2	+21 44.2	6 7.4	+ 3 57.7	+1.1212	.5808	+.1720	+90	+34
A^2 Tauri	6	1.03	4.2	21 40.1	6 22.4	+ 4 12.2	+1.2328	.5810	.1708	+90	+45
62 Tauri	6	0.98	5.4	24 0.4	13 41.8	+11 14.2	+0.0701	.5833	.1515	+48	-24
k Tauri	5½	0.83	6.7	24 51.3	19 3 1.1	+ 0 1.5	+0.9883	.5861	.1138	+90	+30
B. A. C. 1648	6½	0.74	8.1	27 49.7	11 49.3	+ 8 28.6	-1.1524	.5868	.0874	-31	-62
B. A. C. 1746	6½	0.66	8.3	27 34.8	17 37.4	- 9 57.2	-0.4462	.5864	.0713	+19	-45
136 Tauri	5	-0.55	+8.7	+27 34.9	20 0 23.4	- 3 27.4	-0.0469	.5855	+.0486	+41	-21
B. A. C 2097	6½	0.32	9.4	28 17.7	14 54.1	+10 28.6	-0.3968	.5813	+.0048	+21	-37
49 Aurigæ	5½	0.29	9.3	28 7.2	16 49.2	-11 40.8	-0.2127	.5805	-.0010	+32	-26
53 Aurigæ	6	0.27	9.7	29 5.5	18 3.6	-10 29.4	-1.2289	.5801	.0045	-44	-61
54 Aurigæ	6	0.26	9.4	28 22.5	18 32.6	-10 1.5	-0.4836	.5796	.0063	+16	-43
28 Geminor.	6	0.23	9.7	29 5.9	20 35.9	- 8 3.0	-1.2589	.5785	.0124	-51	-61
47 Geminor.	6	-0.05	+9.0	+27 3.8	21 7 23.0	+ 2 19.0	+0.5686	.5724	-.0438	+85	+11
53 Geminor.	6	-0.02	9.3	28 7.0	9 13.4	+ 4 5.2	-0.6234	.5716	.0483	+ 8	-55
59 Geminor.	6½	+0.04	9.2	27 52.9	12 45.8	+ 7 29.5	-0.5661	.5693	.0584	+12	-52
ι Geminorum	4	0.05	9.2	28 2.9	13 15.1	+ 7 57.7	-0.7714	.5689	.0594	- 1	-62
b^1 Geminor.	5	0.07	9.3	28 22.7	14 44.0	+10 23.5	-1.2117	.5678	.0638	-39	-62
b^2 Geminor.	5	0.08	9.3	28 10.6	14 56.0	+ 9 34.9	-1.0113	.5677	.0642	-18	-62
B. A. C. 2472	6	+0.09	+9.3	+28 10.8	15 17.2	+ 9 55.3	-1.0375	.5675	-.0648	-20	-62
υ Geminorum	4½	0.12	8.8	27 10.6	17 30.0	-11 56.9	-0.1281	.5659	.0713	+37	-27
c Geminorum	6	0.17	8.4	26 5.1	20 57.6	- 8 37.0	+0.7679	.5634	.0801	+90	+19
φ Geminorum	5	0.24	8.6	27 5.5	22 0 54.7	- 4 48 6	-0.6390	.5604	.0902	+ 8	-59
ω^1 Cancri	6	0.28	8.0	25 44.3	4 7.1	- 1 43.1	+0.4998	.5577	.0980	+78	+ 2
ω^2 Cancri	6½	0.28	7.8	25 26.2	4 28.3	- 1 22.7	+0.7870	.5577	.0992	+90	+18
ψ^1 Cancri	6½	+0.35	+7.9	+26 12.9	8 7.4	+ 2 8.5	-0.4219	.5548	-.1076	+21	-47
ψ^2 Cancri	6	0.34	7.8	25 53.4	8 14.2	+ 2 15.1	-0.0863	.5548	.1078	+39	-29
λ Cancri	6	0.40	7.1	24 25.2	12 40.7	+ 6 32.1	+0.9847	.5509	.1185	+90	+28
υ^1 Cancri, *mult.*	7	0.45	7.1	24 56.8	15 22.8	+ 9 8.5	+0.0925	.5484	.1248	+49	-21
υ^2 Cancri	6½	0.46	6.9	24 33.8	16 15.2	+ 9 59.1	+0.3942	.5482	.1263	+69	- 6
υ^3 Cancri	6	0.47	6.9	24 30.4	17 33.1	+11 14.2	+0.2901	.5468	.1293	+62	-12
32 Cancri	6	+0.48	+6.8	+24 30.8	18 13.0	+11 52.8	+0.1951	.5464	-.1304	+56	-17
ξ Cancri	5	0.70	5.1	22 33.3	23 10 58.4	+ 4 4.4	-0.1667	.5324	.1639	+35	-39
79 Cancri	6	0.70	5.0	22 30.5	11 26.6	+ 4 31.6	-0.1926	.5317	.1648	+33	-41
B. A. C. 3138	6	0.72	4.6	21 48.1	13 0.5	+ 6 2.5	+0.3125	.5306	.1674	+63	-15
B. A. C. 3292	6½	0.86	3.4	20 52.0	24 1 16.4	- 6 5.1	-0.8521	.5210	.1874	- 3	-69
η Leonis	3½	0.97	1.1	17 22.6	15 38.0	+ 7 50.4	+0.1213	.5104	.2075	+51	-30
42 Leonis	6	+1.03	+0.2	+15 36.6	23 11.2	- 8 49.8	+0.4603	.5057	-.2162	+72	-14
B. A. C. 3579	6	1.05	-0.6	14 59.2	25 2 52.0	- 5 15.4	+0.3429	.5033	.2203	+64	-21
i Leonis	6	1.07	0.8	14 47.0	4 39.6	- 3 30.9	+0.1701	.5021	.2221	+53	-30
ν Virginis	4½	1.30	6.1	7 14.0	26 21 21.9	-11 55.9	-1.1918	.4860	.2507	-23	-83
B. A. C. 3996	6	1.30	6.6	5 53.5	23 13.5	-10 7.3	-0.1708	.4856	.2513	+35	-52
b Virginis	6	+1.32	-7.3	+ 4 21.3	27 5 24.0	- 4 6 6	-0.0234	.4846	-.2534	+43	-45

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0 $\Delta\alpha$	Red'ns from 1874.0 $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
10 Virginis	6	+1.34	− 8.1	+ 2 36.2	27 10 58.2	+ 1 18.8	+0.5069	.4840	−.2547	+74	−18
γ Virg., *mult.*	2½	1.41	9.8	− 0 45.7	28 5 21.6	− 4 46.8	−0.4617	.4838	.2562	+20	−71
B. A. C. 4277	6	1.42	9.9	0 53.2	6 26.5	− 3 43.6	−0.6001	.4842	.2562	+13	−82
38 Virginis	6	1.43	10.5	2 52.3	11 55.6	+ 1 36.7	+0.2015	.4847	.2556	+54	−34
k Virginis	6	1.44	10.6	3 8.1	15 36.1	+ 5 10.5	−0.4441	.4856	.2550	+21	−70
46 Virginis	6	1.45	10.6	2 41.6	16 8.4	+ 5 42.9	−1.0713	.4856	.2549	−15	−90
48 Virginis	6	+1.45	−10.7	− 2 59.3	18 1.4	+ 7 32.9	−1.2241	.4858	−.2545	−26	−90
θ Virginis	4½	1.46	11.2	4 52.1	21 26.6	+10 52.7	−0.0044	.4867	.2535	+43	−44
m Virginis	6	1.51	12.1	8 4.2	29 15 12.3	+ 4 9.8	−0.8983	.4919	.2462	− 5	−90
B. A. C. 4591	6	1.52	12.3	9 4.8	18 17.5	+ 7 9.9	−0.5355	.4932	.2443	+14	−77
λ Virginis	4½	+1.57	−12.8	−12 47.6	30 11 34.8	− 0 1.7	−0.5480	.5015	−.2313	+12	−78
MAY.											
5 Libræ	6	+1.61	−12.8	−14 55.8	1 1 40.5	−10 20.5	−1.3533	.5097	−.2170	−51	−90
α^1 Libræ	6	1.61	12.8	15 28.6	4 6.3	− 7 58.9	−1.2767	.5111	.2143	−40	−90
α^2 Libræ	2½	1.61	12.8	15 31.2	4 12.2	− 7 53.2	−1.2488	.5111	.2142	−37	−90
B. A. C. 4896	6	1.62	12.8	17 16.1	4 31.6	− 7 34.4	+0.6058	.5114	.2136	+70	−12
ι^1 Libræ	4½	1.64	12.6	19 19.0	14 57.2	+ 2 32.4	+0.6961	.5181	.2002	+71	− 7
ι^2 Libræ	5½	1.64	12.5	19 10.5	15 30.3	+ 3 4.5	+0.4301	.5187	.1991	+58	−21
B. A. C. 5109	6	+1.65	−12.3	−19 14.6	2 1 1.0	−11 42.4	−1.3240	.5252	−.1852	−53	−90
δ Scorpii	2½	1.67	11.5	22 15.9	14 12.9	+ 1 4.1	−0.3150	.5344	.1625	+14	−63
B. A. C. 5335	6½	1.68	11.3	23 16.1	16 53.7	+ 3 39.6	+0.3524	.5363	.1573	+48	−25
B. A. C. 5354	6½	1.68	11.2	23 21.5	18 7.1	+ 4 50.6	+0.2589	.5372	.1550	+43	−30
19 Scorpii	6	1.68	10.8	23 51.9	23 36.1	+10 8.7	−0.0083	.5414	.1438	+28	−44
ρ Ophiuchi	5	1.67	10.8	23 9.4	3 1 52.9	−11 39.1	−1.1015	.5427	.1393	−34	−90
22 Scorpii	5	+1.68	−10.4	−24 50.3	3 56.6	− 9 39.6	+0.4428	.5441	−.1350	+51	−20
25 Scorpii	6	1.67	9.9	25 18.1	11 24.8	− 2 26.8	−0.0015	.5492	.1181	+25	−44
18 Ophiuchi	6	1.66	9.9	24 25.1	12 43.1	− 1 11.2	−1.1110	.5498	.1155	−38	−90
B. A. C. 5641	6½	1.66	9.8	24 37.0	13 25.9	− 0 29.9	−0.9777	.5503	.1136	−28	−90
B. A. C. 5709	6	1.65	9.5	24 54.2	17 13.3	+ 3 9.6	−1.0819	.5523	.1053	−37	−90
26 Ophiuchi	6	1.65	9.5	24 47.8	17 18.4	+ 3 14.5	−1.2045	.5523	.1052	−48	−90
B. A. C. 5800	6½	+1.66	− 8.7	−26 50.0	23 24.3	+ 9 7.4	+0.4012	.5537	−.0898	+44	−21
A^1 Ophiuchi	5	1.65	8.7	26 25.1	23 55.9	+ 9 37.9	−0.0950	.5563	.0888	+18	−50
A^2 Ophiuchi	6	1.65	8.7	26 25.0	23 56.0	+ 9 38.0	−0.0960	.5563	.0888	+18	−50
38 Ophiuchi	6½	1.65	8.6	26 29.4	4 0 53.8	+10 33.7	−0.1019	.5569	.0864	+17	−50
B. A. C. 5909	6½	1.62	8.2	26 10.4	6 57.6	− 7 35.5	−0.9192	.5600	.0711	−29	−90
3 Sagittarii	5	1.60	7.2	27 46.9	13 38.7	− 1 9.1	+0.3944	.5632	.0534	+41	−22
B. A. C. 6024	6½	+1.59	− 7.3	−27 1.2	14 50.9	+ 0 0.5	−0.4865	.5638	−.0503	− 6	−77
B. A. C. 6063	6½	1.59	6.8	28 2.8	17 29.9	+ 2 33.6	+0.4900	.5648	.0429	+46	−16
B. A. C. 6072	6½	1.59	6.6	28 44.4	18 17.6	+ 3 19.6	+1.2006	.5649	.0414	+61	+39
B. A. C. 6120	6½	1.56	6.3	28 22.3	21 0.8	+ 5 55.0	+0.6790	.5662	.0317	+58	− 5
B. A. C. 6127	5	1.56	6.2	28 28.2	22 15.2	+ 7 8.4	+0.7688	.5662	.0306	+62	+ 1
B. A. C. 6190	6½	1.54	5.8	28 41.5	5 2 7.9	+10 52.4	+0.9078	.5675	.0198	+62	+10
B. A. C. 6191	6½	+1.54	− 5.9	−28 19.6	2 8.3	+10 52.8	+0.5168	.5675	−.0198	+46	−14
B. A. C. 6194	6	1.52	6.2	27 5.3	2 27.0	+11 10.8	−0.8128	.5678	.0184	−26	−90
B A. C. 6220	6½	1.52	5.7	28 29.4	4 3.3	−11 16.6	+0.6578	.5682	−.0144	+56	− 6
φ Sagittarii	3½	1.43	5.1	27 7.2	13 52.9	− 1 49.1	−0.8065	.5700	+.0133	−27	−90
τ Sagittarii	3½	1.36	4.0	27 51.2	22 38.5	+ 6 36.7	+0.1992	.5706	.0383	+29	−33
B. A. C. 6628	6	1.30	3.2	28 6.4	6 5 52.0	−10 26.2	+0.8155	.5704	.0585	+62	+ 4
B. A. C. 6666	6	+1.26	− 3.2	−27 14.6	8 5.7	− 8 17.5	+0.0398	.5703	+.0646	+22	−42
ω Sagittarii	5	1.15	2.3	26 37.9	18 49.8	+ 2 2.3	+0.2513	.5686	.0929	+36	−30
b Sagittarii	5	1.15	2.0	27 30.2	19 16.9	+ 2 28.4	+1.2073	.5686	.0938	+63	+37
A Sagittarii	5	1.13	2.2	26 32.1	20 8.1	+ 3 17.6	+0.2745	.5683	.0976	+38	−28
B. A. C. 7077	6	+0.95	− 1.2	−25 22.1	7 10 19.7	− 7 2.6	+0.7055	.5644	+.1345	+65	− 4

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 7108	6½	+0.93	-1.0	-25 32.6	7 12 25.1	- 5 1.8	+1.1738	.5634	+.1407	+65	+31
B. A. C. 7197	6	0.85	1.4	23 11.7	16 54.7	- 0 42.1	-0.6136	.5621	.1510	- 3	-88
B. A. C. 7237	6	0.84	0.8	24 15.2	18 52.1	+ 1 11.1	+0.7852	.5613	.1557	+66	0
χ Capricorni	6	0.73	1.1	21 41.9	8 1 33.5	+ 7 27.8	-0.7672	.5586	.1714	- 9	-90
φ Capricorni	5½	0.68	1.1	21 10.4	4 36.5	+10 34.2	-0.7761	.5573	.1781	- 9	-90
33 Capricorni	5½	0.64	0.7	21 23.2	8 17.6	- 9 52.6	+0.1144	.5560	.1857	+39	-38
35 Capricorni	6	+0.63	-0.5	-21 44.4	9 37.8	- 8 35.3	+0.7293	.5554	+.1888	+69	- 4
37 Capricorni	6	0.58	0.6	20 38.7	12 57.4	- 5 22.8	+0.2414	.5539	.1956	+46	-31
ε Capricorni	4½	0.56	0.7	20 1.8	13 56.1	- 4 26.2	-0.1987	.5535	.1976	+23	-56
κ Capricorni	5	0.52	0.7	19 26.4	16 22.6	- 2 4.9	-0.3154	.5523	.2028	+18	-63
B. A. C. 7550	6	0.53	0.4	20 11.8	16 37.0	- 1 51.0	+0.5099	.5523	.2031	+61	-17
29 Aqua., *mult.*	6	0.40	0.7	17 34.2	9 4 8.6	+ 9 23.0	-0.3791	.5483	.2185	+17	-67
56 Aquarii	6	+0.24	-0.6	-15 13.7	13 38.5	- 5 33.4	+0.1031	.5444	+.2395	+44	-38
τ² Aquarii	4	0.13	0.3	14 15.4	22 24.9	+ 2 55.1	+1.2697	.5419	.2518	+76	+33
74 Aquarii	6	+0.10	0.8	12 17.2	10 0 12.1	+ 4 38.6	-0.2713	.5415	.2539	+26	-59
ψ¹ Aquarii	4½	-0.03	1.0	9 46.5	10 28.5	- 9 25.7	-0.1333	.5390	.2656	+35	-51
χ Aquarii	5½	0.05	1.4	8 24.8	10 56.8	- 8 58.4	-1.3766	.5389	.2660	-47	-90
ψ² Aquarii	4½	0.04	0.8	9 52.2	11 25.5	- 8 30.6	+0.2166	.5389	.2666	+53	-33
ψ³ Aquarii	5	-0.04	-0.7	-10 18.0	11 54.5	- 8 2.6	+0.7761	.5389	+.2669	+75	- 3
B. A. C. 8214	6½	0.14	0.8	8 9.7	19 34.4	- 0 38.1	+0.7011	.5380	.2738	+82	- 8
B. A. C. 8274	6	0.20	0.7	7 4.8	11 1 35.9	+ 5 11.3	+1.2779	.5375	.2780	+83	+31
24 Piscium	6½	0.25	1.5	3 51.3	3 38.1	+ 7 9.4	-1.3801	.5375	.2792	-44	-90
27 Piscium	5½	0.27	1.2	4 15.3	6 18.4	+ 9 44.5	-0.2307	.5376	.2807	+32	-57
29 Piscium	5½	0.29	1.3	3 43.7	7 45.6	+11 8.7	-0.3479	.5376	.2815	+26	-64
4 Ceti	6	-0.31	-1.2	- 3 15.0	10 29.8	-10 12.5	-0.0540	.5377	+.2827	+41	-47
5 Ceti	6	0.32	1.2	3 8.9	10 42.7	-10 0.0	-0.0935	.5377	.2827	+39	-49
B. A. C. 5	6	0.32	1.3	2 55.4	10 57.1	- 9 46.1	-0.2501	.5377	.2828	+31	-58
10 Ceti	6	0.41	1.3	- 0 44.9	19 13.5	- 1 46.2	-0.0660	.5388	.2851	+40	-48
73 Piscium	6½	0.59	1.4	+ 4 58.8	12 12 44.3	- 8 50.7	-0.7537	.5430	.2839	+ 5	-81
77 Piscium	6	0.59	1.2	4 14.2	13 10.3	- 8 25.6	+0.1060	.5430	.2837	+49	-38
e Piscium	5½	-0.61	-1.3	+ 4 58.9	14 20.5	- 7 17.8	-0.3008	.5434	+.2835	+28	-60
88 Piscium	6	0.64	1.4	6 19.7	17 11.1	- 4 33.0	-0.8287	.5445	.2822	+ 1	-84
96 Piscium	6½	0.68	0.8	6 38.6	23 38.1	+ 1 40.7	+0.6696	.5470	.2787	+88	- 8
B. A. C. 481	6½	0.70	0.6	7 0.0	13 2 45.4	+ 4 41.5	+1.1828	.5485	.2766	+90	+24
o Piscium	4	0.74	0.5	8 31.4	6 53.0	+ 8 40.5	+0.8125	.5505	.2733	+90	0
54 Ceti	6	0.77	0.6	10 25.1	9 17.3	+10 59.8	-0.4069	.5514	.2713	+23	-64
B. A. C. 609	6	-0.80	-0.4	+11 41.0	13 1.6	- 9 23.8	-0.6506	.5537	+.2676	+10	-77
B. A. C. 1648	6½	0.85	+7.0	27 49.7	16 21 59.9	- 3 32.6	-1.1671	.5935	.0881	-33	-62
B. A. C. 1746	6½	0.80	7.4	27 34.8	17 3 41.3	+ 1 54.8	-0.4676	.5937	.0701	+17	-46
136 Tauri	.5	0.73	7.8	27 34.9	10 18.7	+ 8 15.9	-0.0745	.5933	.0496	+40	-22
B. A. C. 2097	6½	0.57	8.7	28 17.7	18 0 29.2	- 2 8.2	-0.4262	.5895	+.0042	+20	-39
49 Aurigæ	5½	0.54	8.7	28 7.2	2 21.6	- 0 20.4	-0.2446	.5890	-.0009	+30	-27
53 Aurigæ	6	-0.53	+8.9	+29 5.5	3 34.1	+ 0 49.1	-1.2505	.5884	-.0053	-49	-61
54 Aurigæ	6	0.52	8.8	28 22.5	4 2.4	+ 1 16.3	-0.5131	.5882	.0064	+15	-44
47 Geminor.	6	0.34	8.8	27 3.8	16 33.4	-10 42.5	+0.5229	.5813	.0445	+80	+ 9
53 Geminor.	6	0.32	9.0	28 7.0	18 21.1	- 8 59.1	-0.6564	.5802	.0491	+ 6	-58
59 Geminor.	6½	0.28	9.0	27 52.9	21 48.0	- 5 40.2	-0.6009	.5776	.0595	+10	-54
ι Geminorum	4	0.27	9.1	28 2.9	22 16.5	- 5 12.8	-0.8043	.5774	.0605	- 3	-62
b¹ Geminorum	5	-0.25	+9.1	+28 22.7	23 43.2	- 3 49.5	-1.2399	.5764	-.0651	-44	-62
b² Geminorum	5	0.25	9.1	28 10.6	23 54.9	- 3 38.2	-1.0418	.5761	.0654	-21	-62
B. A. C. 2472	6	0.24	9.1	28 10.8	19 0 15.5	- 3 18.4	-1.0678	.5760	.0662	-23	-62
υ Geminorum	4½	0.21	8.8	27 10.6	2 25.0	- 1 13.9	-0.1698	.5741	.0727	+34	-30
c Geminorum	6	0.16	8.5	26 5.1	5 47.3	+ 2 0.6	+0.7148	.5717	.0816	+90	+16
φ Geminorum	5	-0.11	+8.8	+27 5.5	9 38.4	+ 5 43.0	-0.6775	.5685	-.0920	+ 6	-61

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ω¹ Cancri	6	−0.07	+ 8.3	+25 44.3	19 12 46.0	+ 8 43.6	+0.4473	.5659	−.0999	+73	− 1
ω³ Cancri	6½	0.06	8.2	25 26.2	13 6.7	+ 9 3.5	+0.7311	.5656	.1006	+90	+15
ψ¹ Cancri	6½	0.01	8.3	26 12.9	16 40.3	−11 30.7	−0.4654	.5623	.1097	+18	−50
ψ² Cancri	6	−0.01	8.3	25 53.4	16 47.0	−11 24.3	−0.1335	.5622	.1099	+36	−31
λ Cancri	6	+0.05	7.7	24 25.2	21 7.0	− 7 13.8	+0.9238	.5586	.1202	+90	+24
υ¹ Cancri, *mult.*	7	0.09	7.8	24 56.8	23 45.2	− 4 41.3	+0.0409	.5559	.1264	+46	−24
υ² Cancri	6½	+0.10	+ 7.6	+24 33.8	20 0 36.3	− 3 52.0	+0.3390	.5553	−.1285	+65	− 9
υ³ Cancri	6	0.11	7.6	24 30.4	1 52.3	− 2 38.7	+0.2354	.5540	.1311	+58	−15
32 Cancri	6	0.12	7.6	24 30.8	2 31.4	− 2 1.0	+0.1413	.5532	.1328	+53	−19
ξ Cancri	5	0.33	6.2	22 33.3	18 54.5	−10 11.7	−0.2218	.5383	.1658	+32	−42
79 Cancri	6	0.34	6.2	22 30.5	19 22.1	− 9 45 1	−0.2475	.5374	.1670	+30	−44
B. A. C. 3138	6	0.35	5.8	21 48.1	20 54.1	− 8 16.2	+0.2519	.5365	.1694	+59	−18
B. A. C. 3292	6½	+0.50	+ 4.8	+20 52.0	21 8 55.9	+ 3 22.2	−0.9049	.5257	−.1894	− 7	−69
η Leonis	3½	0.64	2.7	17 22.6	23 3.6	− 6 56.4	+0.0567	.5140	.2089	+47	−33
42 Leonis	6	0.71	1.6	15 36.6	22 6 30.6	+ 0 17.2	+0.3920	.5083	.2177	+67	−18
B. A. C. 3579	6	0.74	1.2	14 59.2	10 8.7	+ 3 48.9	+0.2752	.5062	.2215	+60	−24
i Leonis	6	0.77	+ 1.0	14 47.0	11 55.1	+ 5 32.1	+0.1034	.5049	.2233	+50	−33
ν Virginis	4½	1.09	− 4.3	7 14.0	24 4 19.8	− 3 10.4	−1.2517	.4857	.2503	−29	−83
B. A. C. 3996	6	+1.09	− 4.9	+ 5 53.6	6 11.0	− 1 22.1	−0.2346	.4854	−.2510	+32	−56
b Virginis	6	1.13	5.8	4 21.3	12 20.6	+ 4 37.6	−0.0864	.4842	.2529	+39	−48
10 Virginis	6	1.16	6.6	+ 2 36.2	17 54.2	+10 2.4	+0.4436	.4833	.2542	+70	−21
γ Virg., *mult.*	2½	1.29	8.6	− 0 45.6	25 12 16.8	+ 3 56.0	−0.5164	.4828	.2553	+17	−75
B. A. C. 4277	6	1.30	8.7	0 53.1	13 21.7	+ 4 59.2	−0.6540	.4831	.2552	+10	−86
38 Virginis	6	1.33	9.5	2 52.2	18 50.7	+10 19.5	+0.1482	.4837	.2545	+52	−36
k Virginis	6	+1.36	− 9.8	− 3 8.1	22 31.3	−10 5.7	−0.4943	.4845	−.2539	+18	−74
46 Virginis	6	1.37	9.6	2 41.6	23 3.6	− 9 34.3	−1.1200	.4845	.2538	−18	−90
48 Virginis	6	1.38	9.8	2 59.2	26 0 56.6	− 7 44.2	−1.2715	.4848	.2533	−31	−90
θ Virginis	4½	1.40	10.4	4 52.1	4 21.9	− 4 24.4	−0.0525	.4857	.2525	+41	−47
m Virginis	6	1.53	11.7	8 4.2	22 7.5	−11 7.5	−0.9345	.4914	.2452	− 8	−90
B. A. C. 4591	6	1.55	12.0	9 4.8	27 1 12.5	− 8 7.5	−0.5706	.4926	.2435	+13	−80
λ Virginis	4½	+1.67	−13.0	−12 47.6	18 28.2	+ 8 39.3	−0.5704	.5015	−.2306	+11	−80
5 Libræ	6	1.78	13.3	14 55.8	28 8 31.1	− 1 42.2	−1.3624	.5104	.2165	−53	−90
α¹ Libræ	6	1.79	13.3	15 28.6	10 56.4	+ 0 38.7	−1.2841	.5119	.2138	−41	−90
α² Libræ	2½	1.80	13.3	15 31.2	11 2.2	+ 0 44.4	−1.2560	.5119	.2137	−38	−90
B. A. C. 4896	6	1.80	13.6	17 16.1	11 21.5	+ 1 3.1	+0.5936	.5120	.2135	+69	−12
ι¹ Libræ	4½	1.88	13.6	19 19.0	21 43.8	+11 6.5	+0.6920	.5198	.1999	+71	− 7
ι² Libræ	5½	+1.89	−13.5	−19 10.5	22 16.7	+11 38.4	+0.4271	.5199	−.1993	+58	−21
B. A. C. 5109	6	1.95	13.2	19 14.6	29 7 43.6	− 3 12.3	−1.3131	.5271	.1848	−51	−90
δ Scorpii	2½	2.05	12.6	22 15.9	20 48.9	+ 9 27.7	−0.2963	.5373	.1622	+15	−62
B. A. C. 5335	6½	2.07	12.5	23 16.2	23 28.2	−11 58.3	+0.3707	.5394	.1570	+49	−24
B. A. C. 5354	6½	2.08	12.4	23 21.5	30 0 40.9	−10 48.1	+0.2785	.5403	.1547	+44	−28
19 Scorpii	6	2.11	12.0	23 52.0	6 6.7	− 5 33.2	+0.0171	.5441	.1441	+29	−43
ρ Oph., *mult.*	5	2.11	11.8	23 9.4	8 22.1	− 3 22.5	−1.0693	.5461	.1383	−32	−90
22 Scorpii	5	+2.14	−11.7	−24 50.3	10 24.4	− 1 24.3	+0.4701	.5478	−.1346	+52	−18
25 Scorpii	6	2.18	11.0	25 18.1	17 47.8	+ 5 43.7	+0.0341	.5528	.1184	+27	−42
18 Ophiuchi	6	2.17	10.9	24 25.1	19 5.2	+ 6 58 4	−1.0691	.5536	.1156	−35	−90
B. A. C. 5641	6½	2.17	10.8	24 37.0	19 47.5	+ 7 39.2	−0.9363	.5542	.1138	−26	−90
B. A. C. 5709	6	2.19	10.4	24 54.2	23 32.3	+11 16.0	−1.0366	.5569	.1047	−33	−90
26 Ophiuchi	6	2.19	10.4	24 47.9	23 37.3	+11 20.8	−1.1590	.5569	.1046	−44	−90
B. A. C. 5800	6½	2.24	9.7	26 50.0	31 5 38.8	− 6 50.6	+0.4452	.5605	.0898	+47	−19
A¹ Ophiuchi	5	+2.23	− 9.6	−26 25.1	6 10.1	− 6 20.4	−0.0481	.5607	−.0887	+20	−47
A² Ophiuchi	6	2.23	9.6	26 25.0	6 10.1	− 6 20.4	−0.0492	.5607	.0887	+20	−47
38 Ophiuchi	6½	2.23	9.5	26 29.4	7 7.3	− 5 25.3	−0.0542	.5614	.0863	+19	−47
B. A. C. 5909	6½	2.24	8.8	26 10.4	13 6.7	+ 0 21.0	−0.8628	.5644	.0708	−25	−90
3 Sagittarii	5	2.27	7.9	27 47.0	19 42.9	+ 6 42.6	+0.4505	.5678	.0530	+44	−18
B. A. C. 6024	6½	2.25	7.8	27 1.2	20 54.2	+ 7 51.2	−0.4254	.5683	.0499	− 3	−72
B. A. C. 6063	6½	+2.27	− 7.3	−28 2.8	23 31.3	+10 22.4	+0.5489	.5694	−.0421	−50	−13

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6072	6½	+2.28	-7.2	-28 44.4	1 0 18.5	+11 7.9	+1.2569	.5695	-.0409	+61	+50
B. A. C. 6120	6½	2.28	6.7	28 22.3	3 41.2	- 9 37.0	+0.7411	.5708	.0311	+62	- 1
B. A C. 6127	5	2.28	6.6	28 28.3	4 13.2	- 9 6.2	+0.8306	.5709	.0299	+62	+ 5
B. A. C. 6190	6½	2.28	6.1	28 41.5	8 3.2	- 5 24.9	+0.9718	.5721	.0190	+62	+15
B. A. C. 6191	6½	2.27	6.1	28 19.6	8 3.5	- 5 24.6	+0.5828	.5721	.0190	+51	-11
B. A. C. 6194	6	2.24	6.2	27 5.3	8 22.0	- 5 6.7	-0.7408	.5724	.0175	-23	-90
B. A. C. 6220	6½	+2.27	-5.8	-28 29.4	9 57.2	- 3 35.2	+0.7249	.5725	-.0136	+62	- 2
φ Sagittarii	3½	2.21	4.6	27 7.1	19 40.2	+ 5 45.7	-0.7256	.5744	+.0145	-22	-90
τ Sagittarii	3½	2.19	3.2	27 51.2	2 4 20.5	- 9 53.7	+0.2838	.5748	.0388	+33	-28
B. A. C. 6628	6	2.15	2.0	28 6.4	11 30.2	- 3 0.6	+0.9045	.5743	.0600	+62	+10
B. A. C. 6666	6	2.12	1.8	27 14.5	13 42.8	- 0 53.0	+0.1321	.5737	.0660	+27	-36
ω Sagittarii	5	2.03	0.4	26 37.9	3 0 22.6	+ 9 22.5	+0.3516	.5712	.0959	+42	-24
A Sagittarii	5	+2.02	-0.2	-26 32.1	1 40.5	+10 37.4	+0.3757	.5711	+.0990	+43	-23
B. A. C. 7077	6	1.87	+1.6	25 22.0	15 49.2	+ 0 14.3	+0.8209	.5682	.1365	+65	+ 3
B. A. C. 7108	6	1.85	1.9	25 32.5	17 54.6	+ 2 15 1	+1.2885	.5649	.1410	+65	+49
B. A. C. 7197	6	1.76	1.9	23 11.6	22 24.1	+ 6 34.7	-0.4984	.5629	.1522	+ 3	-77
B. A. C. 7237	6	1.77	2.4	24 15.2	4 0 21.6	+ 8 27.9	+0.9041	.5622	.1561	+66	+ 8
χ Capricorni	6	1.66	3.0	21 41.9	7 3.9	- 9 4.5	-0.6479	.5589	.1716	- 3	-90
27 Capricorni	6	+1.63	+2.5	-21 3.6	7 29.8	- 8 39.5	-1.2348	.5582	+.1729	-44	-90
φ Capricorni	5½	1.60	2.9	21 10.3	10 7.7	- 6 7.3	-0.6552	.5560	.1783	- 2	-90
33 Capricorni	5½	1.56	3.4	21 23.1	13 49.8	- 2 33.1	+0.2400	.5551	.1862	+45	-31
35 Capricorni	6	1.55	3.6	21 44.3	15 10.5	- 1 15.3	+0.8580	.5546	.1889	+68	+ 4
37 Capricorni	6	1.50	3.7	20 38.6	18 31.4	+ 1 58.5	+0.3702	.5528	.1959	+53	-24
ε Capricorni	4½	1.48	3.6	20 1.7	19 30.6	+ 2 55.6	-0.0715	.5525	.1979	+30	-48
κ Capricorni	5	+1.44	+3.7	-19 26.3	21 58.3	+ 5 18.1	-0.1878	.5511	+.2023	+24	-55
B. A. C. 7550	6	1.45	4.0	20 11.7	22 12.8	+ 5 32.1	+0.6418	.5511	.2024	+68	- 9
29 Aqua., *mult.*	6	1.31	4.1	17 34.2	5 6 49.4	-10 9.2	-0.2491	.5465	.2182	+23	-58
56 Aquarii	6	1.13	4.6	15 13.6	19 29.6	+ 2 5.1	+0.2407	.54[illegible]5	.2379	+51	-31
74 Aquarii	6	0.97	4.6	12 17.1	6 6 14.3	-11 31.8	-0.1358	.5367	.2515	+33	-51
ψ¹ Aquarii	4½	0.82	4.6	9 46.4	16 43.6	- 1 23.2	+0.0033	.5333	.2626	+41	-44
χ Aquarii	5½	+0.80	+4.2	- 8 24.7	17 12.6	- 0 55 1	-1.2537	.5331	+.2628	-32	-90
ψ² Aquarii	4½	0.81	4.7	9 52.2	17 41.9	- 0 26.8	+0.3569	.5331	.2634	+61	-26
ψ³ Aquarii	5	0.81	4.9	10 17.9	18 11.5	+ 0 1.9	+0.9228	.5328	.2638	+80	+ 5
B. A. C. 8214	6½	0.69	4.8	8 9.6	7 2 2.5	+ 7 37.5	+0.8459	.5313	.2700	+82	0
B. A. C. 8274	6	0.62	4.9	7 4.7	8 13.2	-10 23.8	+1.4286	.5304	.2738	+83	+57
24 Piscium	6½	0.56	3.9	3 51.2	10 18.7	- 8 22.4	-1.2636	.5303	.2750	-30	-90
27 Piscium	5½	+0.54	+4.2	- 4 15.2	13 3.4	- 5 43.0	-0.1007	.5300	+.2763	+38	-49
29 Piscium	5½	0.52	4.2	3 43.7	14 32.9	- 4 16.4	-0.2201	.5300	.2770	+32	-56
4 Ceti	6	0.48	4.2	3 14.9	17 21.7	- 1 33.0	+0.0763	.5300	.2780	+48	-40
5 Ceti	6	0.48	4.2	3 8.8	17 35.0	- 1 20.1	+0.0361	.5300	.2782	+46	-42
B. A. C. 5	6	0.47	4.1	2 55.3	17 49.9	- 1 5.8	-0.1227	.5300	.2783	+37	-51
10 Ceti	6	0.36	4.0	- 0 44.8	8 2 20.6	+ 7 8.5	+0.0590	.5305	.2802	+47	-41
73 Piscium	6½	+0.14	+3.3	+ 4 58.9	20 23.2	+ 0 35.8	-0.6525	.5344	+.2785	+10	-84
77 Pisc., *mult.*	6	0.14	3.6	4 14.3	20 50.0	+ 1 1.8	+0.2192	.5344	.2784	+56	-32
e Piscium	5½	0.12	3.4	4 59.0	22 2.3	+ 2 11.7	-0.1946	.5348	.2780	+34	-54
88 Piscium	6	0.08	3.2	6 19.8	9 0 58.3	+ 5 1.8	-0.7330	.5358	.2768	+ 6	-82
96 Piscium	6½	+0.02	3.6	6 38.6	7 37.1	+11 27.4	+0.7804	.5386	.2732	+90	- 2
B. A. C. 481	6½	-0.02	3.7	7 0.1	10 49.9	- 9 26.1	+1.2969	.5399	.2717	+90	+34
ο Piscium	4	-0.07	+3.5	+ 8 31.4	15 5.0	- 5 19.6	+0.9162	.5419	+.2680	+90	+ 7
54 Ceti	6	0.10	3.1	10 25.1	17 33.5	- 2 56.2	-0.3229	.5431	.2658	+28	-59
B. A. C. 609	6	0.14	3.0	11 41.1	21 24.4	+ 0 46.9	-0.5742	.5455	.2622	+14	-73
NEPTUNE				9 54.1	22 7.4	+ 1 28.3	+1.3996	.5453	.2615	+90	+55
29 Arietis	6½	0.28	3.4	14 28.5	10 12 11.4	- 8 57.0	+0.3838	.5542	.2447	+66	-19
o Arietis	6	-0.32	+3.7	+14 46.7	17 13.9	- 4 5.4	+1.2960	.5577	+.2375	+90	+42

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
40 Arietis	6	−0.35	+ 3.1	+17 45.5	10 18 53.7	− 2 29.1	−1.2984	.5589	+.2345	−39	−72
π Arietis, *mult.*	5½	0.35	3.3	16 56.4	19 14.1	− 2 9.5	−0.3987	.5589	.2343	+23	−58
ρ^2 Arietis	6	0.37	3.3	17 49.3	22 0.2	+ 0 30.7	−0.6403	.5610	.2294	+10	−71
ρ^3 Arietis	6	0.37	3.4	17 31.2	22 15.5	+ 0 45.3	−0.2809	.5612	.2291	+29	−51
53 Arietis	6	0.36	3.6	17 23.6	11 2 55.6	+ 5 15.2	+0.8964	.5645	.2207	+90	+12
54 Arietis	6½	0.41	3.6	18 18.6	3 17.7	+ 5 36.5	+0.0574	.5644	.2201	+47	−32
δ Arietis	4½	−0.43	+ 3.5	+19 15.0	4 38.8	+ 6 54.7	−0.5883	.5658	+.2173	+12	−67
B. A. C. 1032	6½	0.45	3.7	20 3.1	8 29.4	+10 36.7	−0.5728	.5685	.2098	+13	−65
τ^1 Arietis	5	0.46	3.6	20 41.5	8 37.8	+10 44.7	−1.1858	.5686	.2096	−28	−70
τ^2 Arietis	5½	0.46	3.7	20 17.4	9 16.4	+11 21.9	−0.6482	.5686	.2086	+ 9	−68
65 Arietis	6	0.46	3.7	20 21.3	9 57.9	−11 58.1	−0.5695	.5694	.2070	+13	−64
B. A. C. 1143	6	0.50	4.3	20 31.7	18 9.9	− 4 4.8	+0.8823	.5748	.1894	+90	+15
32 Tauri	6	−0.53	+ 4.5	+22 6.9	23 8.1	+ 0 42.0	+0.1989	.5781	+.1776	+56	−20
33 Tauri	6	0.54	4.4	22 48.6	23 12.2	+ 0 45.9	−0.4873	.5782	.1775	+17	−57
36 Tauri	6	0.55	4.5	23 45.6	12 2 6.2	+ 3 33.1	−0.9397	.5800	.1704	−10	−66
A^1 Tauri	4½	0.56	4.5	21 44.2	2 16.3	+ 3 42.9	+1.1243	.5801	.1701	+90	+34
A^2 Tauri	6	0.56	4.5	21 40.1	2 31.3	+ 3 57.3	+1.2357	.5802	+.1689	+90	+45
47 Geminor.	6	0.36	8.0	27 3.8	15 2 14.6	+ 0 46.7	+0.4284	5855	−.0458	+72	+ 4
53 Geminor.	6	−0.36	+ 8.2	+28 7.0	3 13.9	+ 1 43.6	−0.7097	.5849	−.0487	+ 3	−61
59 Geminor.	6½	0.32	8.2	27 52.9	7 25.9	+ 5 45.7	−0.6982	.5820	.0616	+ 4	−61
ι Geminorum	4	0.31	8.2	28 2.9	7 54.1	+ 6 12.8	−0.9012	.5818	.0625	−10	−62
B. A. C. 2472	6	0.30	8.3	28 10.7	9 51.8	+ 8 5.8	−1.1665	.5806	.0682	−33	−62
υ Geminorum	4	0.27	8.2	27 10.6	11 59.8	+10 8.8	−0.2752	.5790	.0742	+29	−35
c Geminorum	6	0.24	8.0	26 5.0	15 19.6	−10 39.1	+0.6009	.5769	.0832	+88	+ 9
φ Geminorum	5	−0.21	+ 8.1	+27 5.5	19 7.7	− 6 59.7	−0.7894	.5739	−.0936	− 2	−63
ω^1 Cancri	6	0.18	7.9	25 44.3	22 12.8	− 4 1.6	+0.3252	.5714	.1017	+64	− 7
ω^2 Cancri	6½	0.16	7.8	25 26.2	22 33.2	− 3 42.0	+0.6070	.5708	.1029	+88	+ 8
ψ^1 Cancri	6½	0.14	7.9	26 12.9	16 2 3.8	− 0 19.2	−0.5874	.5679	·1116	+11	−57
ψ^2 Cancri	6	0.14	7.9	25 53.4	2 10.4	− 0 12.9	−0.2577	.5679	.1119	+29	−38
λ Cancri	6	0.10	7.5	24 25.2	6 26.6	+ 3 53.8	+0.7878	.5638	·1228	+90	+16
υ^1 Cancri, *mult.*	7	−0.07	+ 7.6	+24 56.8	9 2.4	+ 6 23.9	−0.0932	.5618	−.1286	+39	−31
υ^2 Cancri	6½	0.06	7.5	24 33.8	9 52.8	+ 7 12.5	+0.2020	.5610	.1306	+56	−16
υ^3 Cancri	6	0.05	7.4	24 30.4	11 7.6	+ 8 24.6	+0.0976	.5599	.1334	+50	−22
32 Cancri	6	−0.04	7.4	24 30.8	11 46.1	+ 9 1.7	+0.0033	.5592	.1350	+44	−27
ξ Cancri	5	+0.12	6.5	22 33.3	17 3 53.5	+ 0 35.1	−0.3770	.5440	.1685	+23	−51
79 Cancri	6	0.13	6.5	22 30.5	4 20.6	+ 1 1.4	−0.4032	.5439	.1691	+22	−52
B. A. C. 3138	6	+0.14	+ 6.2	+21 48.1	5 51.1	+ 2 28.6	+0.0911	.5421	−.1722	+49	−26
B. A. C. 3292	6½	0.26	5.5	20 52.0	17 41.1	−10 4.7	−1.0703	.5310	.1922	−18	−69
η Leonis	3½	0.39	3.8	17 22.6	18 7 35.5	+ 3 23.3	−0.1291	.5188	.2116	+37	−43
42 Leonis	6	0.45	2.8	15 36.6	14 55.8	+10 30.2	+0.1980	.5131	.2200	+56	−27
B. A. C. 3579	6	0.48	2.4	14 59.2	18 30.7	−10 1.2	+0.0791	.5103	.2239	+48	−34
i Leonis	6	0.50	+ 2.3	14 47.0	20 15.6	− 8 19.5	−0.0929	.5090	.2255	+39	−43
B. A. C. 3837	6	+0.67	− 1.0	+ 8 45.0	19 18 34.3	−10 39.1	+1.2497	.4948	−.2431	+90	+31
B. A. C. 3996	6	0.84	3.2	5 53.6	20 14 4.4	+ 8 19.0	−0.4454	.4870	.2518	+21	−69
b Virginis	6	0.89	4.1	4 21.4	20 11.6	− 9 43.7	−0.2975	.4854	.2533	+29	−60
10 Virginis	6	0.93	5.0	+ 2 36.2	21 1 43.3	− 4 20.7	+0.2311	.4843	.2544	+57	−32
γ Virg., *mult.*	2½	1.08	7.0	− 0 45.6	20 2.0	−10 31.1	−0.7199	.4830	.2559	+ 6	−90
B. A. C. 4277	6	1.09	7.1	0 53.1	21 6.8	− 9 28.0	−0.8566	.4830	.2546	− 1	−90
38 Virginis	6	+1.13	− 8.1	− 2 52.2	22 2 35.2	− 4 8.2	−0.0529	.4834	−.2538	+41	−47
k Virginis	6	1.17	8.3	3 8.0	6 15.6	− 0 33.7	−0.6918	.4838	.2530	+ 8	−90
46 Virginis	6	1.18	8.2	2 41.6	6 47.9	− 0 2.2	−1.3161	.4839	.2529	−35	−90
θ Virginis	4½	1.22	9.1	4 52.1	12 6.0	+ 5 7.4	−0.2467	.4849	.2514	+31	−57
m Virginis	6	1.38	10.7	8 4.2	23 5 52.3	− 1 35.0	−1.1110	.4900	2436	−19	−90
B. A. C. 4591	6	+1.41	−11.1	− 9 4.8	8 57.6	+ 1 25.3	−0.7444	.4914	−.2418	+ 3	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
λ Virginis	4½	+1.59	-12.5	-12 47.6	24 2 14.9	- 5 46.3	-0.7231	.4997	-.2290	+ 2	-90
B. A. C. 4896	6	1.77	13.6	17 16.1	19 9.4	+10 38.7	+0.4643	.5109	.2115	+62	-19
ι¹ Libræ	4½	1.90	13.8	19 19.0	25 5 31.8	- 3 17.6	+0.5786	.5189	.1979	+66	-13
ι² Libræ	5½	1.90	13.8	19 10.5	6 4.8	- 2 45.7	+0.3150	.5192	.1974	+51	-27
δ Scorpii	2½	2.17	13.3	22 15.9	26 4 34.8	- 4 58.7	-0.3692	.5375	.1605	+11	-66
B. A. C. 5335	6½	2.21	13.3	23 16.2	7 13.6	- 2 25.2	+0.3005	.5393	.1558	+45	-27
B. A. C. 5354	6½	+2.22	-13.2	-23 21.5	8 26.0	- 1 15.3	+0.2109	.5406	-.1530	+40	-32
19 Scorpii	6	2.28	12.9	23 52.0	13 50.4	+ 3 58.2	-0.0405	.5450	.1424	+26	-46
ρ Ophi., *mult.*	5	2.30	12.5	23 9.5	16 5.1	+ 6 8.3	-1.1192	.5468	.1379	-36	-90
22 Scorpii	5	2.34	12.5	24 50.3	18 6.8	+ 8 5.8	+0.4184	.5483	.1335	+49	-21
25 Scorpii	6	2.42	12.0	25 18.2	27 1 27.5	- 8 48.9	-0.0029	.5544	.1167	+25	-44
18 Ophiuchi	6	2.42	11.6	24 25.2	2 44.4	- 7 34.8	-1.0998	.5553	.1140	-37	-90
B. A. C. 5641	6½	+2.42	-11.6	-24 37.0	3 26.3	- 6 54.3	-0.9652	.5558	-.1121	-28	-90
B. A. C. 5709	6	2.46	11.2	24 54.2	7 9 5	- 3 19.1	-1.0588	.5583	.1037	-35	-90
26 Ophiuchi	6	2.46	11.2	24 47.9	7 14.4	- 3 14.3	-1.1800	.5583	.1036	-45	-90
B. A. C. 5800	6½	2.55	10.7	26 50.1	13 12.9	+ 2 31.2	+0.4274	.5625	.0887	+46	-20
A¹ Ophiuchi	5	2.55	10.6	26 25.1	13 43.9	+ 3 1.1	-0.0628	.5630	.0871	+19	-48
A² Ophiuchi	6	2.55	10.6	26 25.0	13 44.0	+ 3 1.1	-0.0639	.5630	.0871	+19	-48
38 Ophiuchi	6½	+2.55	-10.4	-26 29.4	14 40.6	+ 3 55.7	-0.0672	.5638	-.0846	+19	-48
B. A. C. 5909	6½	2.60	9.6	26 10.4	20 36.5	+ 9 38.4	-0.8608	.5673	.0691	-25	-90
3 Sagittarii	5	2.67	8.8	27 47.0	28 3 8.4	- 8 4.2	+0.4573	.5711	.0518	+44	-18
B. A. C. 6024	6½	2.66	8.6	27 1.2	4 18.9	- 6 56.4	-0.4114	.5716	.0487	- 2	-71
B. A. C. 6063	6½	2.70	8.2	28 2.8	6 54.1	- 4 27.1	+0.5618	.5729	.0412	+50	-12
B. A. C. 6072	6½	2.72	8.1	28 44.5	7 40.7	- 3 42.2	+1.2671	.5733	.0389	+61	+53
B. A. C. 6120	6½	+2.73	- 7.8	-28 22.3	11 0.9	- 0 29.6	+0.7601	.5746	-.0297	+62	0
B. A. C. 6127	5	2.74	7.4	28 28.3	11 32.5	+ 0 0.8	+0.8500	.5750	.0278	+62	+ 6
B. A. C. 6190	6½	2.76	6.8	28 41.6	15 19.5	+ 3 39.0	+0.9975	.5762	.0175	+62	+17
B. A. C. 6191	6½	2.75	6.8	28 19.6	15 19.8	+ 3 39.4	+0.6105	.5762	.0175	+53	- 9
B. A. C. 6194	6	2.72	6.7	27 5.3	15 38.1	+ 3 56.9	-0.7040	.5765	.0160	-21	-90
B A. C. 6220	6½	2.76	6.5	28 29.4	17 12.0	+ 5 27.2	+0.7547	.5770	-.0120	+62	0
ϕ Sagittarii	3½	+2.76	- 4.7	-27 7.1	29 2 46.6	- 9 20.3	-0.6685	.5793	+.0163	-19	-90
τ Sagittarii	3½	2.79	3.2	27 51.2	11 18.9	- 1 7.9	+0.3490	.5800	.0410	+37	-24
B. A. C. 6628	6	2.80	1.8	28 6.4	18 21.6	+ 5 38.4	+0.9775	.5798	.0616	+62	+15
B. A. C. 6666	6	2.77	- 1.4	27 14.5	20 32.1	+ 7 43.8	+0.2152	.5796	.0686	+32	-32
ω Sagittarii	5	2.74	+ 0.6	26 37.9	30 7 1.0	- 6 11.6	+0.4516	.5774	.0981	+48	-19
A Sagittarii	5	2.73	0.8	26 32.1	8 17.6	- 4 58.0	+0.4781	.5772	.1014	+50	-17
B. A. C. 7077	6	+2.64	+ 3.3	-25 22.0	22 11.8	+ 8 24.5	+0.9348	.5720	+.1387	+65	+11
JULY.											
B. A. C. 7197	6	+2.55	+ 4.2	-23 11.6	1 4 40.1	- 9 21.8	-0.3541	.5687	+.1552	+11	-66
B. A. C. 7237	6	2.55	4.7	24 15.1	6 35.7	- 7 30.6	+1.0411	.5675	.1598	+66	+18
χ Capricorni	6	2.45	5.4	21 41.8	13 11.5	- 1 9.4	-0.4883	.5643	.1747	+ 6	-75
27 Capricorni	6	2.43	5.3	21 3.5	13 37.0	- 0 44.8	-1.0700	.5639	.1760	-29	-90
ϕ Capricorni	5½	2.41	5.8	21 10.3	16 12.4	+ 1 44.9	-0.4909	.5625	.1814	+ 6	-76
33 Capricorni	5½	+2.39	+ 6.4	-21 23.0	19 51.2	+ 5 15.7	+0.4042	.5605	+.1894	+53	-22
35 Capricorni	6	2.38	6.7	21 44.3	21 10.7	+ 6 32.4	+1.0205	.5598	.1920	+68	+15
37 Capricorni	6	2.33	7.0	20 38.6	2 0 28.8	+ 9 43.3	+0.5409	.5577	.1990	+63	-15
ε Capricorni	4½	2.31	7.0	20 1.6	1 27.0	+10 39.4	+0.1035	.5572	.2010	+39	-38
κ Capricorni	5	2.28	7.2	19 26.2	3 52.7	-11 0.1	-0.0085	.5559	.2056	+34	-44
B. A. C. 7550	6	+2.29	+ 7.4	-20 11.7	4 7.0	-10 46.3	+0.8166	.5558	+.2058	+70	+ 1
29 Aqua., *mult.*	6	2.16	8.1	17 34.1	12 37.1	- 2 34.2	-0.0567	.5508	.2212	+33	-47
50 Aquarii	6	2.01	8.5	14 9.9	22 31.1	+ 6 59.4	-1.2653	.5451	.2368	-38	-90
B. A. C. 7835	6½	1.97	8.6	13 33.4	3 1 2.5	+ 9 25.6	-1.2838	.5440	.2401	-39	-90
56 Aquarii	6	+1.99	+ 9.1	-15 13.6	1 9.4	+ 9 32.2	+0.4471	.5440	+.2402	+63	-21

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0 Δα	Red'ns from 1874.0 Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
74 Aquarii	6	+1.84	+ 9.5	-12 17.0	3 11 49.3	- 4 9.4	+0.0839	.5388	+.2536	+45	-39
ψ^1 Aquarii	4½	1.70	9.9	9 46.3	22 16.0	+ 5 56.6	+0.2318	.5346	.2637	+54	-32
χ Aquarii	5½	1.68	9.5	8 24.6	22 44.9	+ 6 24.5	-1.0235	.5343	.2642	-14	-90
ψ^2 Aquarii	4½	1.69	10.0	9 52.1	23 14.1	+ 6 52.7	+0.5860	.5342	.2645	+76	-14
ψ^3 Aquarii	5	1.69	10.2	10 17.8	23 43.7	+ 7 21.4	+1.1519	.5340	.2651	+80	+21
B. A. C. 8214	6½	1.58	10.3	8 9.5	4 7 34.2	- 9 3.5	+1.0812	.5316	.2707	+82	+15
24 Piscium	6½	+1.44	+ 9.6	- 3 51.1	15 51.2	- 1 2.6	-1.0275	.5295	+.2750	-12	-90
27 Piscium	5½	1.42	9.9	4 15.1	18 36.5	+ 1 37.4	+0.1383	.5293	.2762	+51	-37
29 Piscium	5½	1.40	9.8	3 43.6	20 6.4	+ 3 4.4	+0.0189	.5292	.2767	+44	-43
4 Ceti	6	1.36	9.9	3 14.8	22 56.1	+ 5 47.7	+0.3166	.5288	.2775	+62	-28
5 Ceti	6	1.36	9.9	3 8.7	23 9.5	+ 6 1.6	+0.2764	.5288	.2775	+59	-30
B. A. C. 5	6	1.35	9.8	2 55.2	23 24.3	+ 6 15.9	+0.1171	.5287	.2776	+50	-38
10 Ceti	6	+1.24	+ 9.7	- 0 44.7	5 7 58.6	- 9 26.2	+0.2997	.5285	+.2789	+60	-28
73 Piscium	6½	1.00	8.8	+ 4 59.0	6 2 13.4	+ 8 13.4	-0.4230	.5301	.2759	+22	-68
77 Pisc., *mult.*	6	1.00	9.1	4 14.4	2 40.6	+ 8 39.8	+0.4543	.5303	.2757	+71	-20
c Piscium	5½	0.98	8.9	4 59.1	3 54.0	+ 9 50.8	+0.0369	.5305	.2752	+46	-41
ζ^1 Piscium	4½	0.95	8.4	6 54.6	6 23.9	-11 44.2	-1.2249	.5312	.2741	-26	-83
ζ^2 Piscium	5½	0.94	8.4	6 54.8	6 24.6	-11 43.5	-1.2246	.5312	.2741	-26	-83
88 Piscium	6	+0.94	+ 8.6	+ 6 19.9	6 52.5	-11 16.5	-0.5076	.5313	+.2739	+18	-73
96 Piscium	6½	0.87	8.9	6 38.7	13 37.8	- 4 44.4	+1.0120	.5335	.2700	+90	+12
o Piscium	4	0.78	8.6	8 31.5	21 13.9	+ 2 36.6	+1.1431	.5362	.2644	+90	+22
54 Ceti	6	0.75	8.0	10 25.2	23 45.3	+ 5 3.0	-0.1106	.5365	.2622	+38	-47
B. A. C. 609	6	0.70	7.8	11 41.1	7 3 40.8	+ 8 50.6	-0.3690	.5393	.2583	+25	-61
29 Arietis	6½	0.54	7.4	14 28.6	18 47.0	- 0 34.0	+0.5781	.5474	.2402	+81	- 9
40 Arietis	6	+0.46	+ 6.7	+17 45.6	8 1 38.7	+ 6 3.4	-1.1332	.5514	+.2299	-22	-72
π Arietis, *mult.*	5½	0.46	7.0	16 56.5	1 59.5	+ 6 23.5	-0.2243	.5516	.2295	+32	-49
ρ^2 Arietis	6	0.43	6.9	17 49.3	4 49.6	+ 9 7.6	-0.4734	.5537	.2248	+19	-62
ρ^3 Arietis	6	0.43	7.0	17 31.3	5 5.2	+ 9 22.7	-0.1103	.5537	.2245	+38	-42
53 Arietis	6	0.38	7.0	17 23.6	9 52.0	-10 0.7	+1.0725	.5571	.2161	+90	+24
54 Arietis	6½	0.38	6.9	18 18.7	10 14.7	- 9 38.9	+0.2231	.5571	.2157	+57	-24
δ Arietis	4½	+0.36	+ 6.7	+19 15.0	11 37.8	- 8 18.7	-0.4325	.5582	+.2129	+21	-58
B. A. C. 1032	6½	0.33	6.6	20 3.2	15 34.0	- 4 31.1	-0.4239	.5608	.2053	+21	-57
τ^1 Arietis	5	0.32	6.4	20 41.6	15 42.5	- 4 23.0	-1.0440	.5609	.2051	-16	-70
τ^2 Arietis	5½	0.32	6.6	20 17.5	16 22.2	- 3 44.7	-0.5015	.5614	.2034	+17	-61
65 Arietis	6	0.31	6.6	20 21.4	17 4.7	- 3 3.8	-0.4232	.5617	.2026	+21	-56
B. A. C. 1143	6	0.24	6.9	20 31.7	9 1 28.6	+ 5 1.6	+1.0292	.5675	.1848	+90	+25
32 Tauri	6	+0.19	+ 6.8	+22 6.9	6 34.1	+ 9 55.6	+0.3293	.5708	+.1732	+64	-14
33 Tauri	6	0.19	6.4	22 48.6	6 38.3	+ 9 59.6	-0.3653	.5708	.1730	+24	-49
36 Tauri	6	0.17	6.3	23 45.6	9 36.4	-11 9.0	-0.8289	.5727	.1669	- 3	-66
A¹ Tauri	4½	0.17	6.8	21 44.2	9 46.8	-10 59.1	+1.2586	.5727	.1657	+90	+48
χ^1 Tauri	5½	0.11	6.2	25 19.9	16 57.4	- 4 4.9	-1.2779	.5769	.1480	-46	-65
χ^2 Tauri	8½	0.11	6.2	25 20.2	16 57.8	- 4 4.5	-1.2817	.5769	.1480	-47	-65
62 Tauri	6	+0.11	+ 6.5	+24 0.5	17 33.3	- 3 30.4	+0.1603	.5774	+.1462	+53	-19
k Tauri	5½	+0.03	6.7	24 51.3	10 7 6.8	+ 9 31.4	+1.0332	.5840	.1096	+90	+33
B. A. C. 1648	6½	-0.02	6.4	27 49.7	15 59.1	- 5 57.5	-1.1558	.5872	.0836	-32	-62
B. A. C. 1746	6½	0.04	6.6	27 34.8	21 47.9	- 0 22.7	+0.4674	.5887	.0669	+18	-46
136 Tauri	6½	-0.06	6.8	27 34.9	11 4 32.5	+ 6 5.6	-0.0935	.5895	+.0452	+38	-25
ξ Cancri	5	+0.13	5.9	22 33.3	14 12 46.8	+11 16.3	-0.5292	.5459	-.1711	+15	-59
79 Cancri	6	+0.13	+ 5.9	+22 30.4	13 13.8	+11 42.4	-0.5465	.5458	-.1717	+14	-61
B. A. C. 3138	6	0.14	5.8	21 48.2	14 53.1	-10 41.7	-0.0843	.5441	.1749	+39	-36
B. A. C. 3292	6½	0.21	5.2	20 52.0	15 2 30.7	+ 0 32.9	-1.2405	.5336	.1950	-34	-69
η Leonis	3½	0.28	3.9	17 22.6	16 19.7	-10 4.6	-0.3282	.5222	.2142	+26	-54
42 Leonis	6	0.32	3.2	15 36.6	23 36.8	- 3 0.9	-0.0155	.5159	.2230	+43	-39
B. A. C. 3579	6	+0.31	+ 2.9	+14 59.2	16 3 10.1	+ 0 26.0	-0.1405	.5135	-.2266	+36	-46

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
i Leonis	6	+0.35	+ 2.7	+14 47.0	16 4 54.1	+ 2 6.8	-0.3150	.5120	-.2283	+27	-55
B. A. C. 3837	6	0.48	0.0	8 45.0	17 3 2.1	- 0 23.5	+0.9890	.4980	.2456	+90	+11
B. A. C. 3996	6	0.61	- 1.8	5 53.6	22 23.7	- 5 33.9	-0.7246	.4891	.2537	+ 7	-83
b Virginis	6	0.65	2.6	4 21.6	18 4 28.5	+ 0 21.1	-0.5829	.4872	.2551	+14	-79
10 Virginis	6	0.69	3.5	2 36.3	9 58.4	+ 5 42.2	-0.0595	.4860	.2558	+41	-47
η Virginis	3½	0.72	4.6	+ 0 1.9	15 46.5	+11 20.9	+1.2897	.4848	.2561	+90	+32
γ Virg., *mult.*	2½	+0.83	- 5.5	- 0 45.6	19 4 12.5	- 0 32.9	-1.0184	.4837	-.2554	-11	-90
B. A. C. 4277	6	0.84	5.6	0 53.1	5 17.1	+ 0 30.0	-1.1550	.4837	.2552	-21	-90
38 Virginis	6	0.88	6.5	2 52.2	10 44.9	+ 5 49.1	-0.3533	.4837	.2542	+26	-64
k Virginis	6	0.91	6.7	3 8.0	14 24.9	+ 9 23.3	-0.9920	.4841	.2531	-10	-90
θ Virginis	4½	0.93	7.6	4 52.1	20 15.0	- 8 55.8	-0.5468	.4847	.2513	+15	-77
h Virginis	5	1.06	9.7	9 31.1	20 9 11.2	+ 3 39.6	+1.3791	.4876	.2456	+81	+45
m Virginis	6	+1.13	- 9.3	- 8 4.1	14 2.2	+ 8 22.8	-1.4060	.4890	-.2427	-53	-90
B. A. C. 4591	6	1.16	9.8	9 4.8	17 8.0	+11 23.5	-1.0373	.4900	.2408	-15	-90
λ Virginis	4½	1.34	11.4	12 47.6	21 10 29.2	+ 4 15.8	-1.0021	.4982	.2271	-15	-90
B. A. C. 4896	6	1.55	12.9	17 16.1	22 3 29.3	- 3 13.6	+0.2073	.5086	.2093	+48	-33
ι¹ Libræ	4½	1.70	13.5	19 19.0	13 55.7	+ 6 54.0	+0.3367	.5156	.1958	+52	-26
ι² Libræ	5½	1.70	13.4	19 10.5	14 28.9	+ 7 26.2	+0.0735	.5164	.1949	+38	-40
δ Scorpii	2½	+2.03	-13.5	-22 15.9	23 13 7.7	+ 5 22.0	-0.5745	.5342	-.1555	0	-83
B. A. C. 5335	6½	2.08	13.6	23 16.2	15 47.5	+ 7 56.5	+0.1014	.5365	.1531	+34	-38
B. A. C. 5354	6½	2.10	13.5	23 21.5	17 0.3	+ 9 6.9	+0.0144	.5374	.1509	+30	-43
19 Scorpii	6	2.18	13.3	23 52.0	22 26.5	- 9 37.8	-0.2276	.5422	.1398	+16	-58
σ Scorpii	3½	2.20	13.7	25 17.5	22 39.5	- 9 25.3	+1.2835	.5425	.1394	+65	+47
ρ Ophi., *mult.*	5	2.21	12.9	23 9.5	24 0 42.0	- 7 26.9	-1.3038	.5440	.1354	-59	-90
22 Scorpii	5	+2.26	-13.2	-24 50.3	2 44.3	- 5 28.8	+0.2400	.5456	-.1308	+39	-31
25 Scorpii	6	2.37	12.6	25 18.2	10 7.0	+ 1 38.5	-0.1673	.5516	.1148	+16	-54
18 Ophiuchi	6	2.37	12.2	24 25.2	11 24.2	+ 2 53.0	-1.2618	.5530	.1114	-54	-90
B. A. C. 5641	6½	2.38	12.2	24 37.1	12 6.4	+ 3 33.7	-1.1267	.5532	.1102	-40	-90
B. A. C. 5709	6	2.44	11.9	24 54.2	15 50.3	+ 7 9.6	-1.2123	.5563	.1012	-49	-90
B. A. C. 5800	6½	2.56	11.6	26 50.1	21 54.8	-10 59.0	+0.2870	.5607	.0863	+37	-28
A¹ Ophiuchi	5	+2.56	-11.4	-26 25.1	22 25.9	-10 29.0	-0.2019	.5613	-.0846	+12	-56
A² Ophiuchi	6	2.55	11.4	26 25.0	22 25.9	-10 29.0	-0.2030	.5613	.0846	+12	-56
38 Ophiuchi	6½	2.57	11.3	26 29.0	23 22.7	- 9 34.4	-0.2042	.5619	.0822	+11	-56
43 Ophiuchi	6	2.63	11.4	28 1.3	25 1 45.1	- 7 17.2	+1.2408	.5635	.0764	+62	+44
B. A. C. 5909	6½	2.64	10.5	26 10.4	5 19.2	- 3 51.0	-0.9847	.5657	.0674	-33	-90
3 Sagittarii	5	2.76	9.8	27 47.0	11 51.3	+ 2 26.3	+0.3460	.5700	.0494	+37	-24
B. A. C. 6024	6½	+2.75	- 9.5	-27 1.2	13 1.7	+ 3 34.3	-0.5190	.5706	-.0463	- 8	-80
B. A. C. 6063	6½	2.81	9.3	28 2.8	15 36.8	+ 6 3.5	+0.4583	.5721	.0389	+43	-18
B. A. C. 6072	6½	2.83	9.3	28 44.5	16 23.4	+ 6 48.3	+1.1641	.5725	.0364	+61	+33
B. A. C. 6120	6½	2.86	8.7	28 22.3	19 43.3	+10 0.5	+0.6651	.5742	.0273	+57	- 6
B. A. C. 6127	5	2.87	8.6	28 28.3	20 14.9	+10 30.9	+0.7560	.5744	.0261	+62	0
B. A. C. 6190	6½	2.91	8.0	28 41.6	26 0 1.3	- 9 51.4	+0.9107	.5761	.0152	+62	+11
B. A. C. 6191	6½	+2.91	- 7.9	-28 19.6	0 1.6	- 9 51.1	+0.5248	.5761	-.0152	+46	-14
B. A. C. 6194	6	2.88	7.6	27 5.3	0 19.8	- 9 33.5	-0.7856	.5761	.0145	-26	-90
B. A. C. 6220	6½	2.93	7.6	28 29.4	1 53.4	- 8 3.1	+0.6728	.5768	-.0097	+57	- 5
φ Sagittarii	3½	2.98	5.6	27 7.2	11 25.5	+ 1 6.4	-0.7244	.5802	+.0190	-22	-90
τ Sagittarii	3½	3.07	4.1	27 51.2	19 54.4	+ 9 15.5	+0.3083	.5816	.0438	+35	-26
B. A. C. 6628	6	3.12	2.5	28 6.4	27 2 53.5	- 8 1.9	+0.9495	.5820	.0646	+62	+13
B. A. C. 6666	6	+3.11	- 2.0	-27 14.5	5 2.7	- 5 57.7	+0.1963	.5820	+.0708	+31	-33
ω Sagittarii	5	3.13	+ 0.3	26 37.9	15 24.6	+ 3 59.8	+0.4557	.5806	.1016	+48	-18
A Sagittarii	5	3.14	0.6	26 32.1	16 40.1	+ 5 12.4	+0.4847	.5805	.1050	+50	-17
B. A. C. 7077	6	3.12	3.6	25 22.0	28 6 22.3	- 5 37.3	+0.9766	.5762	.1426	+65	+13
B. A. C. 7197	6	3.06	4.9	23 11.6	12 44.1	+ 0 29.8	-0.2917	.5737	.1589	+14	-62
B. A. C. 7237	6	+3.08	+ 5.3	-24 15.1	14 37.7	+ 2 19.1	+1.0955	.5729	+.1638	+66	+22

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
χ Capricorni	6	+3.00	+ 6.6	-21 41.8	28 21 6.2	+ 8 33.1	-0.4036	.5700	+.1790	+10	-69
27 Capricorni	6	2.98	6.6	21 3 5	21 31.2	+ 8 57.1	-0.9790	.5696	.1804	-22	-90
φ Capricorni	5½	2.98	7.1	21 10.3	29 0 3.7	+11 24.0	-0.3987	.5685	.1858	+11	-69
33 Capricorni	5½	2.98	7.8	21 23.0	3 38.2	- 9 9.6	+0.4962	.5664	.1940	+59	-17
35 Capricorni	6	2.98	8.1	21 44.2	4 56.1	- 7 54.5	+1.1094	.5658	.1966	+68	+22
37 Capricorni	6	2.94	8.6	20 38.5	8 10.1	- 4 47.6	+0.6427	.5642	.2034	+68	- 9
ε Capricorni	4½	+2.92	+ 8.7	-20 1.6	9 7.2	- 3 52.7	+0.2121	.5636	+.2053	+45	-33
κ Capricorni	5	2.90	9.1	19 26.2	11 29.8	- 1 35.3	+0.1069	.5620	.2104	+40	-38
B. A. C. 7550	6	2.91	9.3	20 11.6	11 51.8	- 1 13.7	+0.9241	.5620	.3107	+70	+ 8
29 Aqua., *mult.*	6	2.81	10.4	17 34.1	20 2.9	+ 6 39.3	+0.0800	.5576	.2260	+40	-40
50 Aquarii	6	2.69	11.6	14 9.8	30 5 43.7	- 8 0.4	-1.0922	.5520	.2418	-22	-90
B. A. C. 7835	6½	+2.66	+11.9	-13 33.3	8 11.7	- 5 37.6	-1.1048	.5508	+.2452	-22	-90
56 Aquarii	6	2.69	12.2	15 13.5	8 18.4	- 5 31.2	+0.6072	.5508	.2452	+72	-12
70 Aquarii	6	2.56	12.7	11 13.0	16 29.5	+ 2 23.0	-1.3794	.5466	.2563	-50	-90
74 Aquarii	6	2.56	13.2	12 17.0	18 43.8	+ 4 32.6	+0.2707	.5455	.2588	+55	-30
ψ¹ Aquarii	4½	2.44	14.0	9 46.2	31 4 56.5	- 9 35.3	+0.4379	.5411	.2688	+66	-21
χ Aquarii	5½	+2.42	+13.7	- 8 24.6	5 24.7	- 9 8.2	-0.8033	.5409	+.2693	0	-90
ψ² Aquarii	4½	2.44	14.1	9 52.0	5 53.3	- 8 40.5	+0.7899	.5406	.2695	+73	- 3
ψ³ Aquarii	5	2.44	14.3	10 17.7	6 22.3	- 8 12.4	+1.3511	.5404	.2701	+80	+41
B. A. C. 8214	6½	2.34	14.6	8 9.5	14 2.6	- 0 47.5	+1.2951	.5379	.2754	+82	+33
24 Piscium	6½	+2.22	+14.4	- 3 51.0	22 9.4	+ 7 3.1	-0.7791	.5356	+.2794	+ 4	-90
AUGUST.											
27 Piscium	5½	+2.20	+14.7	- 4 15.1	1 0 51.4	+ 9 39.8	+0.3796	.5348	+.2804	+65	-25
29 Piscium	5½	2.18	14.7	3 43.5	2 19.6	+11 5.1	+0.2634	.5347	.2805	+58	-31
4 Ceti	6	2.15	14.9	3 14.7	5 6.1	-10 13.8	+0.5625	.5342	.2816	+78	-15
5 Ceti	6	2.15	14.8	3 8.7	5 19.2	-10 1.2	+0.5229	.5341	.2816	+75	-17
B. A. C. 5	6	2.15	14.8	2 55.2	5 33.8	- 9 47.1	+0.3653	.5341	.2817	+65	-25
10 Ceti	6	2.05	14.8	- 0 44.6	14 0.0	- 1 37.4	+0.5567	.5332	.2825	+78	-16
73 Piscium	6½	+1.84	+14.2	+ 4 59.1	2 7 57.9	- 8 14.7	-0.1468	.5337	+.2784	+36	-51
77 Pisc., *mult.*	6	1.84	14.5	4 14.4	8 24.7	- 7 48.8	+0.7261	.5337	.2780	+90	- 6
e Piscium	5½	1.83	14.3	4 59.2	9 37.3	- 6 38.6	+0.3114	.5337	.2774	+61	-27
ζ¹ Piscium	4½	1.79	13.8	6 54.7	12 5.5	- 4 15.3	-0.9430	.5341	.2763	- 6	-83
ζ² Piscium	5½	1.79	13.8	6 54.9	12 6.2	- 4 14.5	-0.9425	.5341	.2763	- 6	-83
88 Piscium	6	1.79	14.0	6 19.9	12 33.8	- 3 47.8	-0.2291	.5342	.2759	+32	-56
96 Piscium	6½	+1.72	+14.2	+ 6 38.8	3 19 15.2	+ 2 40.4	+1.2859	.5357	+.2715	+90	+34
o Piscium	4	1.64	13.8	8 31.6	2 47.9	+ 9 58.1	+1.4184	.5378	.2652	+90	+61
54 Ceti	6	1.62	13.2	10 25.3	5 18.5	-11 36.4	+0.1675	.5385	.2629	+53	-33
B. A. C. 609	6	1 58	12.9	11 41.2	9 12.8	- 7 49.9	-0.0914	.5399	.2588	+39	-45
29 Arietis	6½	1.42	12.2	14 28.7	4 0 17.6	+ 6 44.0	+0.8482	.5465	.2396	+90	+ 6
40 Arietis	6	1.35	11.1	17 45.6	7 10.1	-10 37.8	-0.8710	.5499	.2288	- 3	-72
π Arietis, *mult.*	5½	+1.35	+11.4	+16 56.5	7 31.0	-10 17.6	+0.0393	.5504	+.2280	+46	-35
ρ² Arietis	6	1.32	11.1	17 49.4	10 21.7	- 7 32.9	-0.2129	.5514	.2237	+33	-47
ρ³ Arietis	6	1.32	11.2	17 31.4	10 37.4	- 7 17.8	+0.1508	.5519	.2228	+52	-28
53 Arietis	6	1.27	11.3	17 23.7	15 25.6	- 2 39.8	+1.3317	.5545	.2142	+90	+51
54 Arietis	6½	1.27	11.0	18 18.8	15 48.5	- 2 17.8	+0.4799	.5547	.2137	+74	-11
δ Arietis	4½	1.26	10.7	19 15.1	17 12.1	- 0 57.2	-0.1793	.5555	.2112	+34	-44
ζ Arietis	4½	+1.24	+10.2	+20 34.7	18 35.9	+ 0 23.7	-1.2374	.5564	+.2083	-33	-70
B. A. C. 1032	6½	1.22	10.4	20 3.3	21 9.9	+ 2 52.1	-0.1753	.5576	.2037	+35	-43
τ¹ Arietis	5	1.22	10.1	20 41.6	21 18.5	+ 3 0.4	-0.7980	.5576	.2034	0	-70
τ² Arietis	5½	1.21	10.3	20 17.6	21 58.4	+ 3 38.9	-0.2542	.5581	.2017	+30	-47
65 Arietis	6	1 20	10.3	20 21.4	22 41.3	+ 4 20.2	-0.1765	.5586	.2003	+34	-42
B. A. C. 1143	6	1.12	10.2	20 31.8	5 7 9.7	-11 29.9	+1.2717	.5632	.1826	+90	+47
32 Tauri	6	+1.08	+ 9.6	+22 6.9	12 18.5	- 6 32.6	+0.5612	.5660	+.1710	+82	- 2

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. $\Delta\alpha$	Red'ns from 1874.0. $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
33 Tauri	6	+1.08	+ 9.4	+22 48.6	5 12 22.8	− 6 28.4	−0.1373	.5664	+.1702	+36	−37
36 Tauri	6	1.05	9.0	23 45.6	15 23.1	− 3 34.9	−0.6080	.5681	.1632	+10	−63
χ^1 Tauri	5½	0.98	8.4	25 19.9	22 49.9	+ 3 35.0	−1.0718	.5717	.1497	−20	−65
χ^2 Tauri	8½	0.98	8.4	25 20.2	22 50.2	+ 3 35.3	−1.0765	.5717	.1451	−21	−65
62 Tauri	6	0.97	8.9	24 0.5	23 26.3	+ 4 10.1	+0.3746	.5723	.1432	+68	− 8
k Tauri	5½	0.85	8.3	24 51.4	6 13 12.2	− 6 35.8	+1.2314	.5780	.1068	+90	+51
B. A. C. 1648	6½	+0.79	+ 7.3	+27 49.7	22 13.7	+ 2 4.5	−0.9915	.5808	+.0811	−16	−62
B. A. C. 1746	6½	0.74	7.2	27 34.8	7 4 8.7	+ 7 45.6	−0.3085	.5820	.0637	+27	−36
136 Tauri	5	0.69	7.1	27 34.9	11 0.8	− 9 38.6	+0.0552	.5828	+.0431	+47	−15
B. A. C 2097	6½	0.59	6.5	28 17.6	8 1 37.7	+ 4 23.6	−0.3821	.5821	−.0013	+22	−36
49 Aurigæ	5½	0.58	6.5	28 7.2	3 32.9	+ 6 14.4	−0.2086	.5817	.0072	+32	−26
53 Aurigæ	6	0.58	6.2	29 5.5	4 47.3	+ 7 25.8	−1.2342	.5816	.0107	−45	−61
54 Aurigæ	6	+0.57	+ 6.4	+28 22.4	5 16.3	+ 7 53.6	−0.4903	.5814	−.0118	+16	−43
47 Geminor.	6	0.50	6.2	27 3.8	18 2.9	− 3 49.6	+0.4857	.5773	.0496	+77	+ 6
53 Geminor.	9	0.50	5.9	28 6.9	19 52.3	− 2 4.4	−0.7150	.5766	.0549	+ 3	−62
59 Geminor.	6½	0.48	5.8	27 52.8	23 22.3	+ 1 17.5	−0.6786	.5748	.0653	+ 5	−60
ι Geminorum	4	0.48	5.8	28 2.9	23 51.1	+ 1 45.3	−0.8859	.5748	.0662	− 9	−62
b^2 Geminorum	5	0.47	5.7	28 10.5	9 1 30.8	+ 3 21.2	−1.1347	.5737	.0711	−29	−62
B. A. C. 2472	6	+0.47	+ 5.7	+28 10.7	1 51.7	+ 3 41.2	−1.1625	.5737	−.0718	−33	−62
υ Geminorum	4½	0.46	5.8	27 10.5	4 2.6	+ 5 47.2	−0.2701	.5727	.0777	+29	−35
c Geminorum	6	0.44	5.8	26 5.0	7 26.9	+ 9 3.7	+0.5999	.5704	.0874	+88	+ 9
φ Geminorum	5	0.44	5.5	27 5.5	11 19.7	−11 12.1	−0.8219	.5683	.0970	− 4	−63
ω^1 Cancri	6	0.42	5.6	25 44.3	14 28.5	− 8 10.4	+0.2893	.5660	.1057	+62	− 9
ω^2 Cancri	6½	0.42	5.6	25 26.1	14 49.2	− 7 50.4	+0.5729	.5658	.1064	+84	+ 5
ψ^1 Cancri	6½	+0.41	+ 5.4	+26 12.9	18 23.6	− 4 23.9	−0.6491	.5633	−.1157	+ 7	−61
ψ^2 Cancri	6	0.41	5 4	25 53.4	18 30.3	− 4 17.5	−0.3175	.5633	.1159	+26	−42
λ Cancri	6	0.39	5.4	24 25.1	22 50.6	− 0 6.6	+0.7180	.5601	.1261	+90	+11
B. A. C. 3837	6	0.40	+ 0.3	8 45.0	13 11 1.9	+ 9 24.0	+0.8078	.4986	.2480	+90	0
B. A. C. 3996	6	0.47	− 1.3	5 53.6	14 6 21.7	+ 4 11.9	−0.9460	.4905	.2562	− 6	−84
b Virginis	6	0.49	2.0	4 21.4	12 25.8	+10 6.1	−0.8153	.4885	.2575	+ 2	−68
10 Virginis	6	+0.51	− 2.7	+ 2 36.3	17 54.9	− 8 33.6	−0.3009	.4872	−.2581	+29	−61
13 Virginis	6	0.52	3.5	− 0 5.3	22 59.8	− 3 36.8	+1.3546	.4862	.2583	+90	+39
η Virginis	3½	0.52	3.5	+ 0 2.0	23 42.3	− 2 55.5	+1.0394	.4860	.2583	+90	+12
γ Virg., *mult.*	2½	0.60	4.4	− 0 45.6	15 12 6.8	+ 9 9.3	−1.2871	.4848	.2572	−32	−90
B. A. C. 4277	6	0.61	4.5	0 53.1	13 11.3	+10 12.1	−1.4256	.4847	.2570	−53	−90
38 Virginis	6	0.63	5.3	2 52.2	18 38.6	− 8 29.3	−0.6295	.4847	.2557	+12	−84
k Virginis	6	+0.66	− 5.5	− 3 8.0	22 18.4	− 4 55.4	−1.2732	.4848	−.2547	−31	−90
θ Virginis	4½	0.69	6.3	4 52.1	16 3 8.3	− 0 14.9	−0.8327	.4852	.2525	0	−90
k Virginis	5	0.78	8.2	9 31.0	17 4.9	−10 38.9	+1.0867	.4875	.2463	+81	+16
B. A. C. 4591	6	0.85	8.4	9 4.8	17 1 2.5	− 2 54.3	−1.3381	.4897	.2411	−41	−90
λ Virginis	6	1.02	10.1	12 47.6	18 27.7	− 9 57.9	−1.3071	.4967	.2267	−41	−90
B. A. C. 4896	6	1.20	11.8	17 16.1	18 11 34.6	+ 6 39.5	−0.0894	.5062	.2082	+32	−49
ι^1 Libræ	4½	+1.34	−12.6	−19 19.0	22 6.7	− 7 7.1	+0.0465	.5127	−.1945	+37	−42
ι^2 Libræ	5½	1.35	12.5	19 10.5	22 40.2	− 6 34.6	−0.2179	.5131	.1936	+23	−57
B. A. C. 5254	6	1.65	13.6	23 36.3	19 18 30.4	−11 21.5	+1.1038	.5276	.1616	+67	+23
δ Scorpii	2½	1.69	13.0	22 15.9	21 34.8	− 8 23.1	−0.8500	.5299	.1561	−15	−90
B. A. C. 5335	6½	1.73	13.3	23 16.2	20 0 16.6	− 5 46.5	−0.1668	.5317	.1514	+21	−54
B. A. C. 5354	6½	1.75	13.2	23 21.5	1 30.4	− 4 35.1	−0.2537	.5330	.1486	+16	−59
19 Scorpii	6	+1.84	−13.1	−23 52.0	7 1.1	+ 0 44.6	−0.4905	.5370	−.1380	+ 3	−76
σ Scorpii	3½	1.86	13.6	25 17.5	7 14.3	+ 0 57.3	+1.0306	.5370	.1376	+65	+17
22 Scorpii	5	1.92	13.2	24 50.3	11 22.5	+ 4 57.2	−0.0143	.5408	.1285	+26	−45
25 Scorpii	6	2.05	12.8	25 18.2	18 51.6	−11 49.0	−0.4148	.5464	.1125	+ 4	−71
B. A. C. 5800	6½	2.26	12.2	26 50.1	21 6 49.7	− 0 16.2	+0.0596	.5550	.0842	+25	−41
A^1 Ophiuchi	5	+2.27	−12.0	−26 25.1	7 21.2	+ 0 14.2	−0.4317	.5553	−.0833	0	−72

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—						At Conjunction in R. A.								Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x′	y′	N'n.	S'n.
		s	″	°	′	d	h	m	h	m				°	°
A² Ophiuchi	6	+2.22	-12.0	-26	25.1	21	7	21.3	+ 0	14.2	-0.4327	.5553	-.0833	0	-72
38 Ophiuchi	6½	2.29	11.9	26	29.4		8	18.9	+ 1	9.8	-0.4326	.5559	.0808	0	-72
43 Ophiuchi	6	2.35	12.1	28	1.3		10	43.3	+ 3	29.0	+1.0249	.5577	.0743	+62	+19
B. A. C. 5909	6½	2.38	11.1	26	10.4		14	20.5	+ 6	58.3	-1.2086	.5603	.0657	-52	-90
3 Sagittarii	5	2.51	10.8	27	47.0		20	58.2	-10	38.6	+0.1408	.5644	.0476	+26	-36
B. A. C. 6024	6½	2.52	10.3	27	1.3		22	9.6	- 9	29.8	-0.7274	.5651	.0444	-20	-90
B. A. C. 6063	6½	+2.58	-10.3	-28	2.8	22	0	46.9	- 6	58.4	+0.2600	.5666	-.0371	+32	-29
B. A. C. 6072	6½	2.61	10.4	28	44.5		1	34.1	- 6	13.0	+0.9710	.5670	.0348	+61	+15
B. A. C. 6120	6½	2.65	9.8	28	22.3		4	56.6	- 2	58.0	+0.4747	.5687	.0256	+44	-17
B. A. C. 6127	5	2.66	9.7	28	28.3		5	28.6	- 2	27.3	+0.5669	.5691	.0238	+49	-12
B. A. C. 6190	6½	2.72	9.2	28	41 6		9	18.0	+ 1	13.4	+0.7289	.5707	.0137	+62	- 2
B. A. C. 6191	6½	2.72	9.1	28	19.6		9	18.3	+ 1	13.7	+0.3412	.5707	.0136	+34	-25
B. A. C. 6194	6	+2.69	- 8.7	-27	5.3		9	36.8	+ 1	31.5	-0.9757	.5709	-.0122	-38	-90
B. A. C. 6220	6½	2.75	8.8	28	29.4		11	11.5	+ 3	2.7	+0.4932	.5717	-.0081	+44	-16
φ Sagittarii	3½	2.85	6.7	27	7.2		20	50.4	-11	40.6	-0.8931	.5753	+.0202	-32	-90
τ Sagittarii	3½	2.99	5.3	27	51.2	23	5	24.5	- 3	26.4	+0.1599	.5773	.0458	+27	-35
B. A. C. 6628	6	3.08	4.0	28	6 4		12	27.2	+ 3	19.8	+0.8158	.5781	.0666	+62	+ 3
B. A. C. 6666	6	3.08	3.3	27	14.6		14	37.3	+ 5	24.9	+0.0656	.5782	.0727	+24	-40
ω Sagittarii	5	+3.16	- 1.0	-26	37.9	24	1	2.9	- 8	33.9	+0.3463	.5780	+.1027	+42	-25
b Sagittarii	5	3.19	1.1	27	30.2		1	29.2	- 8	8.6	+1.2915	.5778	.1041	+63	+57
A Sagittarii	5	3.17	- 0.7	26	32.1		2	18.8	- 7	20.9	+0.3782	.5778	.1062	+44	-23
B. A. C. 7077	6	3.24	+ 2.5	25	22.0		16	2.6	+ 5	51.1	+0.8983	.5753	.1444	+65	+ 8
B. A. C. 7197	6	3.22	4.2	23	11.6		22	24.0	+11	57.8	-0.3526	.5737	.1614	+11	-66
B. A. C. 7237	6	3.25	4.5	24	15.1	25	0	17.3	-10	13.2	+1.0349	.5728	.1655	+66	+17
χ Capricorni	6	+3.21	+ 6.2	-21	41.8		6	44.3	- 4	0.9	-0.4442	.5704	+.1818	+ 9	-72
27 Capricorni	6	3.19	6.4	21	3.5		7	9.2	- 3	36.9	-1.0162	.5703	.1825	-24	-90
φ Capricorni	5½	3.21	6.9	21	10.3		9	40.7	- 1	11.0	-0.4321	.5693	.1888	+10	-71
33 Capricorni	5½	3.22	7.6	21	23.0		13	13.8	+ 2	14.0	+0.4675	.5677	.1965	+58	-19
35 Capricorni	6	3.23	7.8	21	44.2		14	31.1	+ 3	28.5	+1.0802	.5669	.1998	+68	+19
37 Capricorni	6	3.21	8.6	20	38.5		17	43.5	+ 6	33.7	+0.6236	.5656	.2066	+67	-10
ε Capricorni	4½	+3.20	+ 8.8	-20	1.6		18	40.1	+ 7	28.2	+0.1980	.5651	+.2087	+44	-34
κ Capricorni	5	3.18	9.3	19	26.2		21	1.3	+ 9	44.3	+0.0997	.5643	.2134	+40	-39
B. A. C. 7550	6	3.20	9.3	20	11.6		21	15.2	+ 9	57.6	+0.9122	.5643	.2137	+70	+ 7
29 Aqua., *mult.*	6	3.14	11.1	17	34.1	26	5	28.6	- 6	7.0	+0.0943	.5607	.2301	+41	-39
50 Aquarii	6	3.06	12.9	14	9.8		15	0.8	+ 3	4.7	-1.0435	.5563	.2460	-18	-90
B. A. C. 7835	6½	3.05	13.3	13	33.3		17	26.4	+ 5	25.1	-1.0491	.5551	.2500	-18	-90
56 Aquarii	6	+3.08	+13.3	-15	13.5		17	33.1	+ 5	31.5	+0.6474	.5551	+.2501	+74	-10
70 Aquarii	6	2.99	14.6	11	13.0	27	1	35.2	-10	43.4	-1.2984	.5518	.2612	-38	-90
74 Aquarii	6	3.00	14.9	12	16.9		3	46.9	- 8	36.3	+0.3402	.5509	.2639	+59	-27
ψ¹ Aquarii	4½	2.92	16.2	9	46.2		13	46.4	+ 1	2.4	+0.5303	.5473	.2743	+72	-17
χ Aquarii	5½	2.90	16.2	8	24.5		14	14.0	+ 1	29.0	-0.6952	.5473	.2747	+ 7	-90
ψ² Aquarii	4½	2.92	16.3	9	52.0		14	41.9	+ 1	56.0	+0.8804	.5469	.2752	+80	+ 3
B. A. C. 8214	6½	+2.87	+17.2	- 8	9.4		22	39.4	+ 9	37.1	+1.3983	.5448	+.2814	+82	+47
24 Piscium	6½	2.77	17.6	3	51.0	28	6	33.8	- 6	44.6	-0.6311	.5430	.2856	+11	-84
27 Piscium	5½	2.77	17.9	4	15.0		9	11.4	- 4	12.3	+0.5183	.5425	.2865	+74	-18
29 Piscium	5½	2.75	18.0	3	43.4		10	37.3	- 2	49.4	+0.4069	.5424	.2871	+67	-23
4 Ceti	6	2.73	18.2	3	14.7		13	19.2	- 0	13.0	+0.7076	.5420	.2878	+87	- 8
5 Ceti	6	2.73	18.2	3	8.6		13	31.9	- 0	0.6	+0.6691	.5419	.2879	+86	-10
B. A. C. 5	6	+2.73	+18.2	- 2	55.1		13	46.1	+ 0	13.1	+0.5142	.5419	+.2880	+75	-18
44 Piscium	6	2.65	18.1	1	14.8		21	23.7	+ 7	35.2	-1.4122	.5413	.2888	-48	-89
10 Ceti	6	2.66	18.5	- 0	44.5		21	57.2	+ 8	7.6	+0.7198	.5413	.2888	+87	- 7
B. A. C. 274	6	2.53	18.2	+ 5	48.5	29	13	6.5	- 1	13.7	-1.4148	.5415	.2852	-50	-84
73 Piscium	6½	2.52	18.5	4	59 1		15	24.8	+ 0	59.9	+0.0567	.5419	.2841	+47	-41
77 Pisc., *mult.*	6	+2.52	+18.6	+ 4	14.5		15	50.9	+ 1	25.1	+0.9183	.5420	+.2840	+90	+ 5

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. $\Delta\alpha$	Red'ns from 1874.0. $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ε Piscium	5½	+2.51	+18.5	+ 4 59.3	29 17 1.3	+ 2 33.1	+0.5111	.5421	+.2833	+75	−17
ζ^1 Piscium	4½	2.49	18.2	6 54.8	19 25.3	+ 4 52.2	−0.7224	.5425	.2818	+ 7	−82
ζ^2 Piscium	5½	2.49	18.2	6 55.0	19 26.0	+ 4 52.9	−0.7221	.5425	.2818	+ 7	−82
88 Piscium	6	2.49	18.4	6 20.0	19 52.8	+ 5 18.8	−0.0178	.5426	.2816	+43	−44
54 Ceti	6	2.37	17.7	10 25.4	30 12 8.9	− 2 58.4	+0.3927	.5460	.2676	+67	−21
B. A. C. 609	6	+2.34	+17.5	+11 41.3	15 56.9	+ 0 41.7	+0.1407	.5474	+.2632	+52	−33
19 Arietis	6	2.30	16.6	14 41.6	21 56.4	+ 6 28.7	−1.3047	.5494	.2557	−37	−76
29 Arietis	6½	2.23	16.6	14 28.8	31 6 38.7	− 9 7.4	+1.0794	.5532	.2428	+90	+21
40 Arietis	6	2.19	15.4	17 45.7	13 21.7	− 2 38.8	−0.6190	.5559	.2320	+11	−70
π Arietis	5½	2.18	15.7	16 56.6	13 42.1	− 2 19.1	+0.2820	.5563	.2310	+60	−22
ρ^2 Arietis	6	+2.17	+15.3	+17 49.5	16 29.1	+ 0 21.9	+0.0329	.5574	+.2259	+46	−34
ρ^3 Arietis	6	2.16	15.4	17 31.4	16 44.5	+ 0 36.7	+0.3930	.5574	.2256	+68	−16
54 Arietis	6½	2.12	15.0	18 18.8	21 49.2	+ 5 30.3	+0.7198	.5599	.2159	+90	+ 2
δ Arietis	4½	+2.12	+14.6	+19 15.2	23 11.1	+ 6 49.3	+0.0668	.5603	+.2134	+48	−31

SEPTEMBER.

Name.	Mag.	$\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
ζ Arietis	4½	+2.11	+14.1	+20 34.8	1 0 33.4	+ 8 8.5	−0.9817	.5613	+.2103	−11	−70
B. A. C. 1032	6½	2.09	14.2	20 3.3	3 4.4	+10 34.0	+0.0705	.5622	.2054	+48	−30
τ^1 Arietis	5	2.09	14.0	20 41.7	3 12.9	+10 42.2	−0.5468	.5625	.2043	+15	−63
τ^2 Arietis	5½	2.08	14.1	20 17.6	3 52.1	+11 19.9	−0.0078	.5627	.2036	+44	−34
65 Arietis	6	2.08	14.1	20 21.5	4 34.2	−11 59.5	+0.0692	.5632	.2020	+48	−30
32 Tauri	6	1.97	12.8	22 7.0	17 58.7	+ 0 55.0	+0.7987	.5691	.1715	+90	+12
33 Tauri	6	+1.97	+12.6	+22 48.7	18 3.0	+ 0 59.1	+0.1048	.5691	+.1714	+50	−25
36 Tauri	6	1.96	12.1	23 45.7	21 0.9	+ 3 50.3	−0.3643	.5704	.1641	+24	−48
χ^1 Tauri	5½	1.90	11.1	25 20.0	2 4 22.8	+10 55.3	−0.8305	.5737	.1447	− 3	−65
χ^2 Tauri	8½	1.90	11.1	25 20.3	4 23.1	+10 55.6	−0.8350	.5737	.1447	− 3	−65
62 Tauri	6	1.88	11.5	24 0.5	4 58.9	+11 30.0	+0.6088	.5737	.1436	+88	− 5
B. A. C. 1648	6½	1.70	8.5	27 49.8	3 3 38.7	+ 9 16.8	−0.7705	.5800	.0797	0	−62
B. A. C. 1746	6	+1.63	+ 8.1	+27 34.8	9 33.4	− 9 2.4	−0.0943	.5804	+.0621	+39	−24
136 Tauri	5	1.56	7.6	27 34.9	16 26.1	− 2 26.0	+0.2625	.5806	.0413	+60	− 4
B. A. C. 1882	6½	1.57	7.0	28 55.3	17 40.8	− 1 14.3	−1.0804	.5806	+.0378	−24	−61
B. A. C. 2097	6½	1.43	6.1	28 17.6	4 7 6.8	+11 40.1	−0.1916	.5786	−.0023	+33	−25
49 Aurigæ	5½	1.40	6.0	28 7.2	9 2.9	−10 28.4	−0.0201	.5780	.0087	+43	−16
53 Aurigæ	6	1.40	5.6	29 5.5	10 17.8	− 9 16.3	−1.0500	.5780	.0115	−22	−61
54 Aurigæ	6	+1.39	+ 5.8	+28 22.4	10 47.0	− 8 48.3	−0.3044	.5777	−.0134	+27	−32
28 Geminor.	6	1.38	5.4	29 5.8	12 51.1	− 6 49.1	−1.0977	.5769	.0195	−26	−61
47 Geminor.	6	1.25	5.1	27 3.8	23 40.3	+ 3 35.2	+0.6578	.5727	.0509	+90	+15
53 Geminor.	6	1.25	4.6	28 6.9	5 1 30.8	+ 5 21.5	−0.5497	.5716	.0563	+13	−51
59 Geminor.	6½	1.21	4.4	27 52.8	5 3.1	+ 8 45.8	−0.5180	.5702	.0657	+15	−49
ι Geminor.	4	1.21	4.3	28 2.8	5 32.3	+ 9 13.8	−0.7269	.5696	.0674	+ 2	−62
b^1 Geminor.	5	+1.20	+ 4.1	+28 22.6	7 1.1	+10 39.3	−1.1779	.5689	−.0711	−34	−62
b^2 Geminor.	5	1.20	4.2	28 10.5	7 13.1	+10 50.8	−0.9793	.5690	.0716	−15	−62
B. A. C. 2472	6	1.19	4.1	28 10.7	7 34.2	+11 11.2	−1.0079	.5685	.0731	−17	−62
υ Geminor.	4½	1.16	4.3	27 10.5	9 46.6	−10 41.5	−0.1149	.5673	.0788	+38	−27
c Geminor.	6	1.12	4.3	26 5.0	13 13.3	− 7 22.4	+0.7540	.5655	.0877	+90	+17
φ Geminor.	5	1.10	3.7	27 5.4	17 9.1	− 3 35.3	−0.6800	.5631	.0979	+ 6	−62
ω^1 Cancri	6	1.06	3.8	25 44.2	20 20.2	− 0 31.3	+0.4316	.5611	.1059	+72	− 2
ω^2 Cancri	6½	+1.05	+ 3.8	+25 26.1	20 41.2	− 0 11.0	+0.7155	.5605	−.1072	+90	+13
ψ^1 Cancri	6½	1.03	3.3	26 12.9	6 0 18.5	+ 3 18.4	−0.5176	.5583	.1157	+15	−53
ψ^2 Cancri	6	1.03	3.4	25 53.3	0 25.3	+ 3 24.9	−0.1839	.5580	.1165	+34	−35
λ Cancri	6	0.98	3.4	24 25.1	4 49.1	+ 7 39.2	+0.8486	.5550	.1268	+90	+19
ν^1 Cancri, *mult.*	7	0.97	3.1	24 56.7	7 29.4	+10 13.9	−0.0604	.5530	.1331	+41	−30
ν^2 Cancri	6½	0.96	3.1	24 33.7	8 21.2	+11 3.8	+0.2332	.5727	−.1346	+58	−15
ν^3 Cancri	6	+0.95	+ 3.0	+24 30.3	9 38.1	−11 42.0	+0.1196	.5514	+.1380	+51	−21

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0 Δα	Red'ns from 1874.0 Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
32 Cancri	6	+0.94	+ 3.0	+24 30.8	6 10 17.6	−11 3.9	+0.0200	.5512	+.1390	+45	−26
ξ Cancri	5	0.82	2.2	22 33.3	7 2 48.0	+ 4 52.8	−0.4678	.5385	.1731	+19	−56
79 Cancri	6	0.81	2.1	22 30.4	3 15.7	+ 5 19.6	−0.4972	.5383	.1738	+17	−58
B. A. C. 3138	6	0.80	2.2	21 48.1	4 48.0	+ 6 48.8	−0.0080	.5369	.1768	+44	−32
B. A. C. 3292	6½	0.73	1.5	20 52.0	16 50.1	− 5 32.6	−1.2552	.5277	.1971	−35	−69
η Leonis	3½	0.64	+ 1.0	+17 22.6	8 6 54.1	+ 8 5.1	−0.3972	.5176	+.2170	+23	−58
38 Virginis	6	+0.50	− 4.8	− 2 52.2	12 1 45.6	+ 0 25.3	−0.7757	.4852	−.2576	+ 4	−90
k Virginis	6	0.51	5.0	3 8.0	5 25.5	+ 3 59.3	−1.4263	.4854	.2564	−53	−90
θ Virginis	4½	0.52	5.6	4 52.0	11 15.5	+ 9 40.1	−0.9943	.4858	.2547	−10	−90
h Virginis	5	0.56	7.1	9 31.0	13 0 12.3	− 1 43.9	+0.9126	.4882	.2479	+81	+ 4
B. A. C. 4896	6	0.86	10.5	17 16.1	14 18 47.8	− 8 19.7	−0.3028	.5061	.2090	+21	−62
ι^1 Libræ	4½	0.96	11.3	19 19.0	15 5 23.7	+ 1 57.4	−0.1694	.5112	.1941	+26	−54
ι^2 Libræ	5½	+0.97	−11.2	−19 10.5	5 57.5	+ 2 30.2	−0.4355	.5114	−.1936	+12	−71
B. A. C. 5254	6	1.22	12.6	23 36.3	16 1 58.6	− 2 5.6	+0.8931	.5248	.1608	+67	+ 7
δ Scorpii	2½	1.26	12.1	22 15.9	5 5.2	+ 0 55.1	−1.0752	.5265	.1556	−30	−90
B. A. C. 5335	6½	1.30	12.4	23 16.2	7 49.1	+ 3 33.7	−0.3864	.5284	.1504	+10	−68
B. A. C. 5354	6½	1.32	12.4	23 21.5	9 3.8	+ 4 46.0	−0.4737	.5293	.1481	+ 5	−75
19 Scorpii	6	1.41	12.4	23 52.0	14 39.0	+10 10.2	−0.7114	.5331	.1369	− 9	−90
σ Scorpii	3½	+1.42	−12.8	−25 17.5	14 52.3	+10 23.1	+0.8222	.5331	−.1365	+65	+ 2
α Scorpii	1½	1.48	13.0	26 9.2	18 40.1	− 9 56.6	+1.2621	.5359	.1286	+64	+43
22 Scorpii	5	1.48	12.5	24 50.3	19 4.2	− 9 33.4	−0.2302	.5360	.1280	+15	−58
25 Scorpii	6	1.60	12.3	25 18.2	17 2 40.5	− 2 12.4	−0.6318	.5415	.1114	− 8	−90
B. A. C. 5800	6½	1.81	12.1	26 50.1	14 51.7	+ 9 33.6	−0.1479	.5490	.0830	+14	−53
A^1 Ophiuchi	5	1.81	11.9	26 25.1	15 23.8	+10 4.6	−0.6437	.5495	.0814	−11	−90
A^2 Ophiuchi	6	+1.81	−11.9	−26 25.1	15 23.8	+10 4.6	−0.6448	.5495	−.0814	−11	−90
38 Ophiuchi	6½	1.83	11.8	26 29.4	16 22.6	+11 1.2	−0.6442	.5502	.0789	−11	−90
43 Ophiuchi	6	1.87	12.2	28 1.3	18 49.9	−10 36.7	+0.8295	.5514	.0732	+62	+ 4
3 Sagittarii	5	2.07	11.1	27 47.0	18 5 17.7	− 0 31.4	−0.0574	.5572	.0468	+15	−48
B. A. C. 6024	6½	2.07	10.7	27 1.3	6 30.7	+ 0 39.0	−0.9341	.5580	.0432	−32	−90
B. A. C. 6063	6½	2.14	10.8	28 2.8	9 11.4	+ 3 13.8	+0.0656	.5592	.0366	+21	−40
B. A. C. 6072	6½	+2.16	−10.9	−28 44.5	9 59.6	+ 4 0.3	+0.7850	.5596	−.0343	+61	+ 2
B. A. C. 6120	6½	2.21	10.4	28 22.4	13 26.8	+ 7 19.9	+0.2858	.5613	.0244	+32	−28
B. A C. 6127	5	2.22	10.4	28 28.3	13 59.5	+ 7 51.4	+0.3791	.5614	.0233	+37	−23
B. A. C. 6190	6½	2.30	10.0	28 41.6	17 54.2	+11 37.5	+0.5460	.5630	.0125	+47	−13
B. A. C. 6191	6½	2.29	9.8	28 19.7	17 54.5	+11 37.7	+0.1539	.5630	.0125	+23	−35
B. A. C. 6194	6	2.27	9.3	27 5.3	18 13.4	+11 55.9	−1.1771	.5631	.0119	−53	−90
B. A. C. 6220	6½	+2.33	− 9.6	−28 29.4	19 50.4	−10 30.6	+0.3092	.5636	−.0075	+32	−27
φ Sagittarii	3½	2.46	7.7	27 7.2	19 5 43.1	− 1 0.0	−1.0842	.5670	+.0208	−44	−90
τ Sagittarii	3½	2.62	6.6	27 51.2	14 29.7	+ 7 26.7	−0.0118	.5690	.0460	+18	−45
B. A. C. 6628	6	2.73	5.4	28 6.5	21 42.7	− 9 36.7	+0.6584	.5698	.0664	+58	− 7
B. A. C. 6666	6	2.74	4.8	27 14.6	23 56.0	− 7 28.5	−0.0979	.5698	.0725	+16	−50
ω Sagittarii	5	2.88	2.9	26 37.9	20 10 36.4	+ 2 47.6	+0.1972	.5698	.1027	+34	−33
b Sagittarii	5	+2.91	− 2.8	−27 30.2	11 3.3	+ 3 13.5	+1.1521	.5698	+.1037	+63	+30
A Sagittarii	5	2.89	− 2.3	26 32.1	11 54.1	+ 4 2.4	+0.2306	.5696	.1061	+36	−31
B. A. C. 7077	6	3.03	+ 0.8	25 22.0	21 1 56.1	− 6 27.3	+0.7721	.5678	.1439	+65	− 1
B. A. C. 7108	6½	3.06	1.2	25 32.6	3 59.8	− 4 28.3	+1.2543	.5674	.1493	+65	+41
B. A. C. 7197	6	3.04	2.7	23 11.6	8 25.2	− 0 12.9	−0.4806	.5661	.1608	+ 5	−75
B. A. C. 7237	6	3.08	2.8	24 15.2	10 20.6	+ 1 38.2	+0.9207	.5660	.1650	+66	+ 8
χ Capricorni	6	+3.08	+ 4.8	−21 41.8	16 54.7	+ 7 57.7	−0.5603	.5639	+.1812	+ 3	−82
27 Capricorni	6	3.06	5.0	21 3.5	17 20.0	+ 8 22.1	−1.1353	.5639	.1819	−33	−90
ϕ Capricorni	5½	3.09	5.5	21 10.3	19 54.1	+10 50.5	−0.5434	.5631	.1881	+ 4	−80
33 Capricorni	5½	3.12	6.2	21 23.0	23 30.6	− 9 41.0	+0.3673	.5621	.1966	+52	−25
35 Capricorni	6	3.14	6.4	21 44.3	22 0 49.1	− 8 25.4	+0.9856	.5617	.1988	+68	+12
37 Capricorni	6	+3.14	+ 7.2	−20 38.6	4 4.3	− 5 17.3	+0.5311	.5607	+.2062	+62	−16

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ε Capricorni	4½	+3.13	+ 7.6	-20 1.6	22 5 1.6	- 4 22.1	+0.1047	.5603	+.2083	+39	-39
κ Capricorni	5	3.13	8.1	19 26.2	7 24.7	- 2 4.2	+0.0098	.5594	.2136	+35	-44
B. A. C. 7550	6	3.15	8.0	20 11.7	7 38.7	- 1 50.7	+0.8262	.5594	.2139	+70	+ 1
29 Aqua., *mult.*	6	3.14	10.1	17 34.1	15 57.6	+ 6 10.2	+0.0183	.5567	.2300	+37	-43
50 Aquarii	6	3.11	12.1	14 9.8	23 1 34.3	- 8 33.7	-1.1036	.5536	.2468	-22	-90
B. A. C. 7835	6½	3.11	12.8	13 33.3	4 0.6	- 6 12.5	-1.1046	.5528	.2505	-22	-90
56 Aquarii	6	+3.14	+12.7	-15 13.5	4 7.3	- 6 6.1	+0.5937	.5528	+.2507	+71	-13
70 Aquarii	6	3.09	14.6	11 13.0	12 10.9	+ 1 40.5	-1.3369	.5507	.2623	-42	-90
74 Aquarii	6	3.12	14.8	12 16.9	14 22.6	+ 3 47.6	+0.3043	.5498	.2655	+57	-28
ψ^1 Aquarii	4½	3.10	16.5	9 46.2	24 0 20.9	-10 34.9	+0.5123	.5479	.2764	+71	-18
χ Aquarii	5½	3.08	16.7	8 24.5	0 48.4	-10 8.4	-0.7081	.5478	.2769	+ 6	-90
ψ^2 Aquarii	4½	3.11	16.6	9 52.0	1 16.2	- 9 41.6	+0.8630	.5477	.2773	+80	+ 1
ψ^3 Aquarii	5	+3.11	+16.6	-10 17.7	1 44.4	- 9 14.4	+1.4168	.5475	+.2778	+80	+53
B. A. C. 8214	6½	3.09	16.8	8 9.4	9 10.6	- 2 3.6	+1.3916	.5464	.2840	+82	+45
24 Piscium	6½	3.04	18.9	3 50.9	17 0.2	+ 5 29.9	-0.6111	.5458	.2889	+13	-83
27 Piscium	5½	3.05	19.2	4 15.0	19 35.9	+ 8 0.2	+0.5352	.5456	.2902	+76	-17
29 Piscium	5½	3.04	19.3	3 43.4	21 0.6	+ 9 22.0	+0.4272	.5456	.2907	+68	-23
4 Ceti	6	3.04	19.6	3 14.6	23 40.2	+11 56.2	+0 7298	.5455	.2917	+85	- 7
5 Ceti	6	+3.04	+19.6	- 3 8.6	23 52.7	-11 51.8	+0.6923	.5455	+.2917	+87	- 9
B. A. C. 5	6	3.03	19.7	2 55.1	25 0 6.7	-11 38.2	+0.5391	.5455	.2918	+77	-17
10 Ceti	6	3.01	20.2	- 0 44.5	8 9.6	- 3 51.9	+0.7570	.5460	.2932	+82	- 5
B. A. C. 274	6	2.96	21.0	+ 5 48.5	22 59.5	+10 27.4	-1.3283	.5481	.2904	-36	-84
73 Piscium	6½	2.96	21.1	4 59.2	26 1 14.5	-11 22.4	+0.1299	.5485	.2895	+51	-37
77 Pisc., *mult.*	6	2.96	21.2	4 14.6	1 39.8	-10 58.0	+0.9811	.5488	.2891	+90	+ 9
e Piscium	5½	+2.96	+21.2	+ 4 59.3	2 48.5	- 9 51.6	+0.5810	.5490	+.2885	+80	-14
ζ^1 Piscium	4½	2.95	21.1	6 54.9	5 8.7	- 7 36.3	-0 6331	.5497	.2873	+12	-81
ζ^2 Piscium	5½	2.95	21.1	6 55.0	5 9.4	- 7 35.6	-0.6328	.5497	.2873	+12	-81
88 Piscium	6	2.95	21.2	6 20.1	5 35.5	- 7 10.4	+0.0632	.5499	.2870	+48	-40
54 Ceti	6	2.92	20.9	10 25.4	21 23.7	+ 8 4.3	+0.4907	.5553	.2731	+74	-17
B. A. C. 609	6	2.91	20.7	11 41.4	27 1 4.7	+11 37.4	+0.2469	.5565	.2690	+58	-28
19 Arietis	6	+2.91	+20.1	+14 41.6	6 52.7	- 6 47.1	-1.1695	.5590	+.2613	-23	-76
29 Arietis	6½	2.88	19.9	14 28.8	15 17.6	+ 1 19.4	+1.1863	.5629	.2485	+90	+29
40 Arietis	6	2.87	18.9	17 45.8	21 47.0	+ 7 34.4	-0.4790	.5660	.2368	+19	-62
π Arietis, *mult.*	5½	2.87	19.1	16 56.7	22 6.7	+ 7 53.3	+0.4077	.5662	.2363	+69	-16
ρ^2 Arietis	6	2.86	18.7	17 49.5	28 0 48.0	+10 28.6	+0.1649	.5674	.2310	+54	-28
ρ^3 Arietis	6	2.86	18.8	17 31.5	1 2.8	+10 42.8	+0.5192	.5677	.2308	+77	-10
54 Arietis	6½	2.84	18.3	18 18.9	5 57.1	- 8 34.0	+0.8447	.5699	.2207	+90	+ 9
δ Arietis	4½	+2.85	+18.0	+19 15.3	7 16.2	- 7 17.9	+0.2030	.5706	+.2181	+56	-24
ζ Arietis	4½	2.86	17.6	20 34.8	8 35.7	- 6 1.3	-0.8276	.5717	.2139	- 1	-70
B. A. C. 1032	6½	2.84	17.5	20 3.4	11 1.5	- 3 41.2	+0.2092	.5723	.2097	+56	-23
τ^1 Arietis	5	2.84	17.3	20 41.8	11 9.7	- 3 33.2	-0.3981	.5723	.2094	+23	-55
τ^2 Arietis	5½	2.84	17.4	20 17.7	11 47.6	- 2 56.8	+0.1326	.5728	.2079	+52	-27
65 Arietis	6	2.84	17.3	20 21.5	12 28.2	- 2 17.7	+0.2085	.5732	.2063	+56	-23
9 Tauri	6	2.84	16.2	22 47.8	17 28.8	+ 2 31 3	-1.2145	.5754	.1945	-32	-67
d Pleiadum	5	+2.83	+15.7	+23 33.5	21 12.6	+ 6 6.4	-1.2671	.5770	+.1858	-39	-67
f Pleiadum	4	2.82	15.5	23 40.2	22 20.3	+ 7 11.5	-1.1722	.5774	.1831	-28	-67
h Pleiadum	5½	2.82	15.5	23 45.2	22 20.8	+ 7 12.0	-1.2540	.5774	.1831	-38	-66
32 Tauri	6	2.78	15.6	22 7.0	29 1 25.7	+10 9.6	+0.9337	.5790	.1746	+90	+20
33 Tauri	6	2.79	15.4	22 48.7	1 29.8	+10 13.6	+0.2502	.5790	.1744	+59	-18
36 Tauri	6	2.79	14.9	23 45.7	4 21.9	-11 1.1	-0.2108	.5802	.1668	+33	-40
χ^1 Tauri	5½	2.76	13.6	25 20.0	11 29.8	- 4 10.2	-0.6677	.5826	.1474	+ 7	-63
χ^2 Tauri	8½	+2.76	+13.6	+25 20.3	11 30.0	- 4 10.0	-0.6719	.5826	+.1474	+ 7	-63
62 Tauri	6	2.74	13.9	24 0.6	12 4.7	- 3 36.6	+0.7506	.5829	.1463	+90	+12
B. A. C. 1648	6½	2.62	9.8	27 49.8	30 10 5.8	- 6 28.5	-0.6077	.5869	.0810	+10	-56
β Tauri	2	2.62	9.3	28 30.1	12 7.4	- 4 31.9	-1.1366	.5869	.0751	-29	-62
B. A. C. 1746	6½	2.56	9.0	27 34.9	15 51.9	- 0 56.4	+0.0599	.5868	.0629	+48	-16
136 Tauri	5	2.49	8.1	27 34.9	22 35.2	+ 5 30.5	+0.4121	.5860	.0417	+71	+ 3
B. A. C. 1882	6½	+2.51	+ 7.4	+28 55.3	23 48.4	+ 6 40.8	-0.9164	.5859	+.0381	-11	-61

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 2097	6½	+2.35	+ 5.7	+28 17.6	1 12 59.3	- 4 40.0	-0.0398	.5824	-.0027	+42	-16
49 Aurigæ	5½	2.33	5.4	28 7.2	14 53.4	- 2 50.4	+0.1297	.5816	.0086	+52	- 8
53 Aurigæ	6	2.33	4.9	29 5.5	16 7.2	- 1 39.5	-0.8919	.5810	.0122	- 9	-61
54 Aurigæ	6	2.31	5.1	28 22.4	16 35.9	- 1 11.9	-0.1529	.5806	.0140	+35	-23
28 Geminor.	6	2.30	4.6	29 5.8	18 38.2	+ 0 45.5	-0.9404	.5797	.0202	-13	-61
47 Geminor.	6	2.14	3.7	27 3.8	2 5 19.3	+11 1.5	+0.7989	.5747	.0512	+90	+23
53 Geminor.	6	+2.14	+ 3.1	+28 6.9	7 8.7	-11 13.3	-0.4019	.5735	-.0565	+22	-41
59 Geminor.	6½	2.09	2.7	27 52.8	10 38.9	- 7 51.2	-0.3720	.5710	.0667	+23	-40
ι Geminorum	4	2.09	2.6	28 2.8	11 7.9	- 7 23.2	-0.5800	.5709	.0678	+11	-53
b^1 Geminorum	5	2.08	2.3	28 22.6	12 35.9	- 5 58.6	-1.0323	.5696	.0723	-19	-62
b^2 Geminorum	5	2.07	2.3	28 10.5	12 47.9	- 5 47.1	-0.8318	.5696	.0726	- 4	-62
B. A. C. 2472	6	2.07	2.3	28 10.6	13 8.8	- 5 27.0	-0.8604	.5696	.0733	- 6	-62
υ Geminorum	4½	+2.02	+ 2.3	+27 10.4	15 20.2	- 3 20.5	+0.0268	.5683	-.0791	+46	-20
c Geminorum	6	1.96	2.2	26 5.0	18 45.6	- 0 2.9	+0.8904	.5656	.0887	+90	+25
φ Geminorum	5	1.93	1.4	27 5.4	22 40.1	+ 3 43.0	-0.5395	.5627	.0990	+14	-54
ω^1 Cancri	6	1.87	1.1	25 44.2	3 1 50.4	+ 6 46.3	+0.5662	.5604	.1069	+84	+ 5
ω^2 Cancri	6½	1.86	1.5	25 26.1	2 11.3	+ 7 6.4	+0.8488	.5603	.1075	+90	+21
ψ^1 Cancri	6½	1.84	0.8	26 12.8	5 47.9	+10 35.2	-0.3819	.5573	.1166	+23	-46
ψ^2 Cancri	6	+1.83	+ 0.9	+25 53.3	5 54.6	+10 41.6	-0.0494	.5573	-.1168	+42	-27
λ Cancri	6	1.75	0.8	24 25.0	10 18.0	- 9 4.5	+0.9777	.5540	.1270	+90	+27
υ^1 Cancri, *mult.*	7	2.35	5.7	24 56.8	12 58.4	- 6 29.7	+0.0674	.5516	.1334	+48	-23
υ^2 Cancri	6	1.71	0.3	24 33.7	13 49.9	- 5 40.1	+0.3620	.5508	.1354	+67	- 9
υ^3 Cancri	6	1.70	0.2	24 30.2	15 6.8	- 4 25.9	+0.2478	.5501	.1380	+59	-15
32 Cancri	6	1.69	+ 0.1	24 30.7	15 46.3	- 3 47.6	+0.1481	.5492	.1397	+53	-20
ξ Cancri	5	+1.49	- 1.1	+22 33.2	4 8 19.0	-11 48.9	-0.3516	.5359	-.1729	+25	-50
79 Cancri	6	1.48	1.1	22 30.4	8 46.8	-11 22.0	-0.3810	.5353	.1740	+24	-51
B. A. C. 3138	6	1.46	1.1	21 48.0	10 19.5	-10 52.4	+0.1066	.5343	.1766	+50	-26
B. A. C. 3292	6½	1.33	2.0	20 51.9	22 25.7	+ 1 50.4	-1.1521	.5242	.1971	-24	-69
η Leonis	3½	1.16	2.4	17 22.5	5 12 36.0	- 8 25.6	-0,3067	.5139	.2167	+28	-53
42 Leonis	6	1.08	2.6	15 36.5	20 3.3	- 1 11.7	-0.0322	.5090	.2253	+43	-40
B. A. C. 3579	6	+1.05	- 2.7	+14 59.1	23 41.3	+ 2 19.9	-0.1782	.5068	-.2292	+35	-48
i Leonis	6	1.04	2.8	14 46.9	6 1 27.6	+ 4 3.1	-0.3639	.5052	.2312	+25	-59
l Leonis	5	0.94	2.8	11 12.6	10 31.8	-11 8.3	+1.4096	.5004	.2394	+90	+60
B. A. C. 3837	6	0.84	3.3	8 44.9	23 59.2	+ 1 56.4	+0.8255	.4942	.2491	+90	+ 1
B. A. C. 3996	6	0.73	4.2	5 53.6	7 19 34.0	- 3 0.8	-1.0007	.4878	.2579	- 9	-84
b Virginis	6	0.70	4.4	+ 4 21.3	8 1 41.8	+ 2 57.2	-0.8880	.4864	.2593	- 2	-86
B. A. C. 4896	6	+0.67	- 9.5	-17 16.0	12 1 7.5	- 0 12.4	-0.3681	.5062	-.2098	+18	-66
ι^1 Libræ	4½	0.74	10.1	19 19.0	11 43.3	+10 4.6	-0.2406	.5121	.1952	+23	-58
ι^2 Libræ	5½	0.74	10.1	19 10.5	12 17.0	+10 37.3	-0.5073	.5123	.1946	+ 9	-77
B. A. C. 5254	6	0.91	11.2	23 36.2	13 8 20.0	+ 6 3.2	+0.8186	.5246	.1619	+67	+ 2
δ Scorpii	2½	0.94	10.9	22 15.8	11 27.2	+ 9 4.5	-1.1582	.5267	.1557	-37	-90
B. A. C. 5335	6½	0.97	11.2	23 16.1	14 11.7	+11 43.8	-0.4677	.5282	.1508	+ 5	-74
B. A. C. 5354	6½	+0.99	-11.2	-23 21.5	15 26.8	-11 3.5	-0.5558	.5292	-.1481	+ 1	-82
19 Scorpii	6	1.05	11.2	23 52.0	21 3.7	- 5 37.5	-0.7963	.5325	.1373	-14	-90
σ Scorpii	3½	1.05	11.6	25 17.5	21 17.1	- 5 24.5	+0.7458	.5326	.1370	+64	- 2
VENUS				25 48.9	22 24.4	- 4 19.4	+1.1763	.4965	.1278	+64	+31
α Scorpii	1½	1.10	11.8	26 9.2	14 1 6.3	- 1 42.9	+1.1880	.5351	.1289	+64	+33
22 Scorpii	5	1.10	11.4	24 50.3	1 30.6	- 1 19.4	-0.3134	.5355	.1277	+11	-64
25 Scorpii	6	1.20	11.3	25 18.1	9 10.3	+ 6 4.9	-0.7185	.5399	.1115	-12	-90
B. A. C. 5800	6½	+1.38	-11.3	-26 50.1	21 28.9	- 6 1.7	-0.2326	.5466	-.0826	+10	-59
A^1 Ophiuchi	5	1.38	11.1	26 25.1	22 1.4	- 5 30.3	-0.7325	.5468	.0816	-16	-90
A^2 Ophiuchi	6	1.38	11.1	26 25.0	22 1.4	- 5 30.3	-0.7337	.5468	.0816	-16	-90
38 Ophiuchi	6½	1.40	11.1	26 29.4	23 0.9	- 4 32.9	-0.7333	.5471	.0792	-16	-90
43 Ophiuchi	6	1.44	11.4	28 1.3	15 1 30.1	- 2 8.9	+0.7523	.5487	.0727	+62	- 1
3 Sagittarii	5	1.60	10.6	27 47.0	12 7.0	+ 8 5.5	-0.1416	.5532	.0463	+11	-53
B. A. C. 6024	6½	+1.61	-10.3	-27 1.3	13 21.1	+ 9 17.0	-1.0266	.5536	-.0434	-39	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6063	6½	+1.66	-10.4	-28 2.8	15 16 4.5	+11 54.6	-0.0172	.5547	-.0360	+17	-45
B. A. C. 6072	6½	1.69	10.6	28 44.5	16 53.6	-11 18.1	+0.7092	.5551	.0338	+60	- 3
B. A. C. 6120	6½	1.74	10.2	28 22.4	20 24.5	- 7 54.7	+0.2055	.5563	.0241	+27	-33
B. A. C. 6127	5	1.75	10.1	28 28.3	20 57.9	- 7 22.6	+0.3000	.5563	.0230	+32	-27
B. A. C. 6190	6½	1.81	9.8	28 41.6	16 0 57.0	- 3 32.1	+0.4691	.5577	.0124	+42	-18
B. A. C. 6191	6½	1.81	9.7	28 19.7	0 57.4	- 3 31.7	+0.0729	.5577	.0123	+20	-40
B A. C. 6220	6½	+1.84	- 9.6	-28 29.4	2 55.6	- 1 37.9	+0.2300	.5581	-.0070	+28	-31
φ Sagittarii	3½	1.98	8.1	27 7.2	13 1.3	+ 8 5.8	-1.1784	.5601	+.0204	-52	-90
τ Sagittarii	3½	2.13	7.2	27 51.2	22 0.8	- 7 14.5	-0.0917	.5614	.0451	+14	-50
B. A. C. 6628	6	2.25	6.3	28 6.5	17 5 25.3	- 0 6.4	+0.5892	.5616	.0658	+54	-11
B. A. C. 6666	6	2.27	5.7	27 14.6	7 42.3	+ 2 5.6	-0.1770	.5616	.0718	+12	-55
ω Sagittarii	5	2.42	3.8	26 38.0	18 41.4	-11 19.6	+0.1251	.5607	.1014	+30	-37
b Sagittarii	5	+2.45	- 4.1	-27 30.2	19 9.2	-10 52.9	+1.0937	.5607	+.1022	+63	+24
A Sagittarii	5	2.44	3.6	26 32.1	20 1.4	-10 2.5	+0.1594	.5605	.1046	+32	-35
B. A. C. 7077	6	2.62	0.9	25 22.1	18 10 30.1	+ 3 54.5	+0.7135	.5577	.1421	+65	- 4
B. A. C. 7108	6½	2.65	- 0.6	25 32.6	12 37.9	+ 5 57.6	+1.2031	.5573	.1472	+65	+33
B. A. C. 7197	6	2.65	+ 1.0	23 11.7	17 12.0	+10 21.8	-0.5558	.5562	.1579	+ 1	-82
B. A. C. 7237	6	2.70	1.0	24 15.2	19 11.2	-11 43.3	+0.8678	.5556	.1626	+66	+ 5
χ Capricorni	6	+2.72	+ 3.0	-21 41.9	19 1 58.4	- 5 10.6	-0.6330	.5539	+.1788	- 1	-89
27 Capricorni	6	2.71	3.3	21 3.6	2 24.5	- 4 45.5	-1.2165	.5535	.1796	-40	-90
φ Capricorni	5½	2.74	3.7	21 10.3	5 3.8	- 2 11.8	-0.6145	.5528	.1851	+ 1	-87
33 Capricorni	5½	2.79	4.3	21 23.1	8 47.4	+ 1 23.8	+0.3111	.5517	.1933	+49	-27
35 Capricorni	6	2.82	4.4	21 44.3	10 8.5	+ 2 42.0	+0.9391	.5513	.1960	+68	+ 9
37 Capricorni	6	2.83	5.3	20 38.6	13 30.2	+ 5 56.7	+0.4795	.5503	.2033	+60	-19
ε Capricorni	4½	+2.82	+ 5.7	-20 1.7	14 29.4	+ 6 53.7	+0.0474	.5499	+.2053	+37	-42
κ Capricorni	5	2.84	6.3	19 26.3	16 57.2	+ 9 16.3	-0.0479	.5494	.2099	+32	-47
B. A. C. 7550	6	2.86	6.1	20 11.7	17 11.7	+ 9 30.4	+0.7804	.5493	.2103	+70	- 2
29 Aqua., *mult.*	6	2.88	8.3	17 34.1	20 1 46.5	- 6 12.9	-0.0348	.5469	.2267	+35	-46
50 Aquarii	6	2.90	10.9	14 9.9	11 40.8	+ 3 21.0	-1.1657	.5444	.2433	-27	-90
B. A. C. 7835	6½	2.91	11.5	13 33.3	14 11.4	+ 5 46.4	-1.1647	.5439	.2470	-26	-90
56 Aquarii	6	+2.95	+11.0	-15 13.5	14 18.3	+ 5 53.0	+0.5544	.5439	+.2471	+69	-15
70 Aquarii	6	2.94	13.3	11 13.0	22 35.2	-10 7.1	-1.3935	.5422	.2591	-53	-90
74 Aquarii	6	2.98	13.4	12 17.0	21 0 50.5	- 7 56.4	+0.2674	.5420	.2620	+55	-30
ψ¹ Aquarii	4½	3.01	15.4	9 46.2	11 3.2	+ 1 55.6	+0.4832	.5409	.2736	+69	-20
χ Aquarii	5½	2.99	15.8	8 24.5	11 31.3	+ 2 22.6	-0.7483	.5409	.2742	+ 4	-90
ψ² Aquarii	4½	3.02	15.5	9 52.0	11 59.8	+ 2 50.2	+0.8377	.5409	.2746	+80	0
ψ³ Aquarii	5	+3.03	+15.4	-10 17.7	12 28.5	+ 3 17.9	+1.3970	.5406	+.2752	+80	+48
B. A. C. 8214	6½	3.05	16.8	8 9.4	20 3.8	+10 37.9	+1.3744	.5405	.2817	+82	+42
24 Piscium	6½	3.04	18.6	3 50.9	22 4 1.3	- 5 40.7	-0.6380	.5410	.2870	+11	-85
27 Piscium	5½	3.06	18.8	4 15.0	6 39.3	- 3 8.1	+0.5168	.5411	.2885	+75	-18
29 Piscium	5½	3.06	19.0	3 43.4	8 5.1	- 1 45.1	+0.4091	.5414	.2892	+67	-24
4 Ceti	6	3.07	19.3	3 14.6	10 46.8	+ 0 51.1	+0.7148	.5417	.2902	+86	- 8
5 Ceti	6	+3.07	+19.4	- 3 8.6	10 59.5	+ 1 3.3	+0.6769	.5417	+.2903	+87	-10
B. A. C. 5	6	3.07	19.4	- 2 55.1	11 13.6	+ 1 17.0	+0.5232	.5418	.2903	+75	-18
44 Piscium	6	3.08	20.7	+ 1 14.8	18 48.1	+ 8 36.0	-1.3731	.5431	.2923	-41	-89
10 Ceti	6	3.10	20.4	- 0 44.5	19 21.2	+ 9 8.0	+0.7456	.5431	.2923	+84	- 6
B. A. C. 274	6	3.13	22.0	+ 5 48.5	23 9 14.6	- 1 29.4	-1.3317	.5479	.2909	-36	-84
73 Piscium	6½	3.15	22.0	4 59.2	12 29.5	+ 1 40.9	+0.1264	.5489	.2900	+51	-37
77 Pisc., *mult.*	6	3.15	22.0	4 14.6	12 54.9	+ 2 5.4	+0.9770	.5489	.2898	+90	+ 8
e Piscium	5½	+3.15	+22.1	+ 4 59.3	14 3.4	+ 3 11.6	+0.5776	.5493	+.2893	+80	-14
ζ¹ Piscium	4½	3.16	22.3	6 54.9	16 23.2	+ 5 26.4	-0.6333	.5505	.2881	+12	-81
ζ² Piscium	5½	3.16	22.3	6 55.1	16 23.9	+ 5 27.1	-0.6331	.5505	.2881	+12	-81
88 Piscium	6	3.16	22.3	6 20.1	16 50.0	+ 5 53.3	+0.0621	.5508	.2880	+48	-40
54 Ceti	6	3.23	22.6	10 25.5	24 8 31.0	- 3 0.1	+0.4946	.5586	.2753	+75	-16
B. A. C. 609	6	3.25	22.5	11 41.4	12 9.2	+ 0 30.2	+0.2699	.5605	.2715	+58	-28
19 Arietis	6	+3.28	+22.3	+14 41.7	17 52.0	+ 6 0.5	-1.1503	.5639	+.2639	-21	-76

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
29 Arietis	6½	+3.31	+21.9	+14 28.9	25 2 7.9	−10 2.2	+1.1890	.5690	+.2514	+90	+30
40 Arietis	6	3.35	21.3	17 45.8	8 29.0	− 3 55.5	−0.4582	.5731	.2399	+20	−61
π Arietis, *mult.*	5½	3.35	21.3	16 56.7	8 48.2	− 3 37.0	+0.4195	.5733	.2395	+70	−16
ρ² Arietis	6	3.36	21.0	17 49.6	11 25.8	− 1 5.5	+0.1798	.5752	.2341	+54	−27
ρ³ Arietis	6	3.36	21.0	17 31.5	11 40.2	− 0 51.6	+0.5305	.5753	.2338	+78	− 9
54 Arietis	6½	3.38	20.5	18 18.9	16 27.2	+ 3 44.3	+0.8527	.5786	.2238	+90	+10
δ Arietis	4½	+3.39	+20.3	+19 15.3	17 44.3	+ 4 58.4	+0.2191	.5799	+.2212	+57	−24
ζ Arietis	4½	3.41	20.0	20 34.9	19 1.6	+ 6 12.7	−0.7989	.5796	.2186	0	−70
B. A. C. 1032	6½	3.41	19.8	20 3.4	21 23.5	+ 8 29.0	+0.2258	.5813	.2127	+57	−22
τ¹ Arietis	5	3.42	19.7	20 41.8	21 31.5	+ 8 36.7	−0.3738	.5814	.2126	+24	−53
τ² Arietis	5½	3.41	19.7	20 17.7	22 8.3	+ 9 12.0	+0.1503	.5816	.2115	+53	−26
65 Arietis	6	3.41	19.6	20 21.6	22 47.8	+ 9 50.0	+0.2257	.5821	.2098	+57	−22
9 Tauri	6	+3.45	+18.7	+22 47.8	26 3 39.8	− 9 29.6	−1.1776	.5851	+.1980	−28	−67
d Pleiadum	5	3.47	18.1	23 33.5	7 16.9	− 6 1.2	−1.2286	.5868	.1892	−34	−67
η Tauri	3	3.47	18.0	23 43.1	7 43.5	− 5 35.7	−1.3023	.5872	.1877	−46	−67
f Pleiadum	4	3.47	17.9	23 40.3	8 22.5	− 4 58.2	−1.1345	.5879	.1857	−25	−67
h Pleiadum	5½	3.47	17.9	23 45.3	8 23.0	− 4 57.8	−1.2153	.5879	.1857	−33	−66
32 Tauri	6	3.45	17.7	22 7.1	11 22.2	− 2 5.8	+0.9419	.5892	.1777	+90	+20
33 Tauri	6	+3.46	+17.6	+22 48.8	11 26.1	− 2 2.1	+0.2684	.5892	+.1777	+60	−16
36 Tauri	6	3.47	17.0	23 45.7	14 12.7	+ 0 37.8	−0.1854	.5906	.1706	+34	−39
χ¹ Tauri	5½	3.50	15.6	25 20.0	21 6.5	+ 7 14.6	−0.6343	.5933	.1508	+ 9	−62
χ² Tauri	8½	3.50	15.6	25 20.4	21 6.8	+ 7 14.9	−0.6390	.5933	.1508	+ 9	−62
62 Tauri	6	3.47	15.8	24 0.6	21 40.3	+ 7 47.0	+0.7621	.5937	.1488	+90	+12
B. A. C. 1648	6½	3.48	10.9	27 49.8	27 18 55.5	+ 4 9.0	−0.5736	.5983	.0824	+12	−53
β Tauri	2	+3.49	+10.3	+28 30.1	20 52.8	+ 6 1.3	−1.0937	.5983	+.0760	−25	−62
B. A. C. 1746	6½	3.44	9.8	27 34.9	28 0 29.3	+ 9 28.7	+0.0659	.5981	.0638	+49	−15
136 Tauri	5	3.39	8.4	27 34.9	6 58.5	− 8 18.4	+0.4293	.5973	.0427	+73	− 5
B. A. C. 1882	6½	3.42	7.8	28 55.3	8 9.1	− 7 10.7	−0.8776	.5970	+.0391	− 8	−61
B. A. C. 2097	6½	3.29	5.2	28 17.6	20 53.1	+ 5 1.5	−0.0158	.5948	−.0029	+44	−15
49 Aurigæ	5½	3.27	4.8	28 7.2	22 43.5	+ 6 47.4	+0.1509	.5917	.0090	+54	− 7
53 Aurigæ	6	+3.28	+ 4.3	+29 5.4	23 54.8	+ 7 55.8	−0.8547	.5911	−.0127	− 6	−61
54 Aurigæ	6	3.26	4.4	28 22.4	29 0 22.6	+ 8 22.4	−0.1275	.5907	.0147	+37	−22
28 Geminor.	6	3.26	3.8	29 5.8	2 21.0	+10 16.0	−0.9030	.5899	.0200	−10	−61
47 Geminor.	6	3.09	2.2	27 3.7	12 42.2	− 3 47.9	+0.8093	.5832	.0525	+90	+24
53 Geminor.	6	3.09	1.5	28 6.9	14 28.4	− 2 5.9	−0.3742	.5818	.0580	+23	−40
59 Geminor.	6½	3.05	0.9	27 52.8	17 52.5	+ 1 10.1	−0.3451	.5794	.0677	+25	−39
ι Geminorum	4	+3.05	+ 0.7	+28 2.8	18 20.7	+ 1 37.2	−0.5504	.5793	−.0686	+13	−51
*b*¹ Geminorum	5	3.04	0.3	28 22.5	19 46.3	+ 2 59.4	−0.9938	.5781	.0731	−16	−62
*b*² Geminorum	5	3.03	0.3	28 10.4	19 57.8	+ 3 10.5	−0.7987	.5777	.0738	− 2	−62
B. A. C. 2472	6	3.03	0.3	28 10.6	20 18.2	+ 3 30.0	−0.8272	.5777	.0743	− 4	−62
υ Geminorum	4½	2.97	+ 0.2	27 10.4	22 26.0	+ 5 32.9	+0.0504	.5754	.0811	+47	−19
c Geminorum	6	2.90	− 0.1	26 4.9	30 1 45.9	+ 8 45.0	+0.8991	.5740	.0900	+90	+26
φ Geminorum	5	+2.88	− 1.1	+27 5.4	5 34.4	−11 35.1	−0.5124	.5695	−.1003	+16	−51
ω¹ Cancri	6	2.81	1.3	25 44.1	8 40.0	− 8 36.6	+0.5789	.5668	.1084	+85	+ 6
ω² Cancri	6½	2.79	1.2	25 26.0	9 0.4	− 8 17.0	+0.8580	.5665	.1090	+90	+21
ψ¹ Cancri	6½	2.77	2.2	26 12.8	12 32.0	− 4 53.2	−0.3580	.5636	.1182	+24	−44
ψ² Cancri	6	2.76	2.1	25 53.2	12 38.5	− 4 47.0	−0.0295	.5633	.1185	+43	−27
λ Cancri	6	2.67	2.3	24 25.0	16 56.0	− 0 39.0	+0.9851	.5585	.1287	+90	+27
υ¹ Cancri, *mult.*	7	+2.64	− 3.0	+24 56.6	19 32.8	+ 1 52.2	+0.0872	.5565	−.1350	+49	−22
υ² Cancri	6½	2.63	3.0	24 33.6	20 23.6	+ 2 41.2	+0.3760	.5558	.1371	+68	− 8
υ³ Cancri	6	2.61	3.2	24 30.2	21 38.9	+ 3 53.8	+0.2632	.5548	.1397	+60	−14
32 Cancri	6	2.60	3.3	24 30.7	22 17.6	+ 4 31.1	+0.1645	.5549	.1408	+54	−19
ξ Cancri	5	2.35	5.1	22 33.1	31 14 33.4	− 3 47.1	−0.3330	.5384	.1744	+26	−49
79 Cancri	6	2.34	5.2	22 30.3	15 0.8	− 3 20.5	−0.3623	.5383	.1750	+25	−50
B. A. C. 3138	6	+2.30	− 5.2	+21 48.0	16 41.5	− 1 43.2	+0.0919	.5365	−.1782	+50	−27

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
B. A. C. 3292	6½	+2.14	- 6.4	+20 51.8	1 4 29.8	+ 9 41.9	-1.1306	.5256	-.1978	-23	-69
η Leonis	3½	1.92	6.9	17 22.4	18 33.5	- 0 40.7	-0.2946	.5168	.2169	+29	-52
42 Leonis	6	1.81	7.2	15 36.5	2 1 58.5	+ 6 31.0	-0.0223	.5113	.2254	+43	-39
B. A. C. 3579	6	1.76	7.3	14 59.1	5 35.8	+10 1.9	-0.1684	.5062	.2292	+36	-48
i Leonis	6	1.74	7.5	14 46.9	7 21.7	+11 44.6	-0.3538	.5052	.2308	+26	-58
B. A. C. 3837	6	1.45	7.6	8 44.8	3 5 52.7	+ 9 37.3	+0.8297	.4926	.2483	+90	+ 1
B. A. C. 3996	6	+1.27	- 8.3	+ 5 53.5	4 1 30.5	+ 4 43.1	-0.9954	.4857	-.2568	- 9	-84
b Virginis	6	1.21	8.2	4 21.3	7 39.4	+10 42.2	-0.8835	.4844	.2582	- 2	-86
10 Virginis	6	1.16	8.3	2 36.2	13 12.6	- 7 53.3	-0.3844	.4836	.2591	+25	-66
Mars				+ 0 38.1	15 20.9	- 5 48.5	+1.2408	.4574	.2482	+90	+26
13 Virginis	6	1.10	8.0	- 0 5.3	18 21.0	- 2 53.1	+1.2624	.4831	.2596	+90	+29
η Virginis	3½	1.10	8.0	+ 0 1.9	19 3.9	- 2 11.4	+0.9436	.4830	.2596	+90	+ 6
γ Virg., *mult.*	2½	+1.03	- 8.6	- 0 45.6	5 7 35.1	+10 0.1	-1.4269	.4828	-.2589	-52	-90
38 Virginis	6	0.98	8.5	2 52.2	14 9.5	- 7 35.9	-0.7841	.4834	.2576	+ 3	-90
k Virginis	6	0.97	8.7	3 8.0	17 50.5	- 4 0.7	-1.4391	.4838	.2567	-59	-90
θ Virginis	4½	0.93	8.7	4 52.1	23 42.1	+ 1 41.5	-1.0116	.4849	.2547	-11	-90
Jupiter				6 25.2	6 4 33.0	+ 6 24.7	-0.5178	.4794	.2503	+17	-76
h Virginis	5	0.96	8.2	9 31.0	12 40.9	- 9 40.4	+0.8869	.4883	.2486	+81	+ 2
19 Scorpii	6	+0.97	-10.3	-23 51.9	10 2 54.9	+ 2 1.1	-0.7630	.5351	-.1374	-12	-90
σ Scorpii	6	0.98	10.5	25 17.5	3 8.3	+ 2 14.0	+0.7791	.5352	.1371	+65	0
α Scorpii	1½	1.01	10.6	26 9.2	6 56.4	+ 5 54.6	+1.2232	.5375	.1292	+64	+37
22 Scorpii	5	1.01	10.4	24 40.3	7 20.6	+ 6 18.0	-0.4621	.5378	.1285	+ 3	-75
25 Scorpii	6	1.07	10.3	25 18.1	14 58.5	-10 19.5	-0.6805	.5422	.1114	-10	-90
B. A. C. 5800	6½	1.18	10.2	26 50.0	11 3 14.9	+ 1 31.8	-0.1894	.5487	.0829	+12	-56
A¹ Ophiuchi	5	+1.19	-10.1	-26 25.1	3 47.4	+ 2 3.1	-0.6902	.5489	-.0814	-13	-90
A² Ophiuchi	6	1.18	10.1	26 25.0	3 47.5	+ 2 3.2	-0.6912	.5489	.0814	-14	-90
38 Ophiuchi	6½	1.20	10.1	26 29.4	4 46.8	+ 3 0.4	-0.6906	.5494	.0789	-14	-90
43 Ophiuchi	6	1.23	10.2	28 1.3	7 15.7	+ 5 24.2	+0.7993	.5505	.0731	+62	+ 2
Venus				27 54.5	14 41.5	-11 25.8	+0.2052	.5455	.0568	+30	-33
3 Sagittarii	5	1.34	9.7	27 47.0	17 52.4	- 8 21.6	-0.0929	.5545	.0459	+14	-50
B. A. C. 6024	6½	+1.35	- 9.5	-27 1.2	19 6.7	- 7 10.0	-0.9799	.5550	-.0428	-35	-90
B. A. C. 6063	6½	1.39	9.5	28 2.8	21 50.3	- 4 32.1	+0.0334	.5559	.0354	+19	-42
B. A. C. 6072	6½	1.41	9.6	28 44.5	22 39.5	- 3 44.7	+0.7626	.5560	.0332	+61	0
B. A. C. 6120	6½	1.45	9.3	28 22.3	12 2 10.9	- 0 20.9	+0.2586	.5571	.0243	+30	-29
B. A. C. 6127	5	1.45	9.3	28 28.3	2 44.4	+ 0 11.3	+0.3537	.5571	.0225	+36	-24
B. A. C. 6190	6½	1.50	9.1	28 41.6	6 44.4	+ 4 2.7	+0.5253	.5580	.0118	+46	-14
B. A. C. 6191	6½	+1.50	- 9.0	-28 19.6	6 44.7	+ 4 3.0	+0.1273	.5580	-.0118	+22	-37
B. A. C. 6194	6	1.49	8.6	27 5.3	7 4.1	+ 4 21.6	-1.2238	.5581	.0112	-57	-90
B. A. C. 6220	6½	1.53	8.8	28 29.4	8 43.4	+ 5 57.4	+0.2860	.5583	-.0065	+30	-28
φ Sagittarii	3½	1.64	7.7	27 7.2	18 52.7	- 8 15.3	-1.1269	.5596	+.0209	-48	-90
τ Sagittarii	3½	1.76	7.0	27 51.2	13 3 57.1	+ 0 29.2	-0.0302	.5598	.0450	+17	-46
B. A. C. 6628	6	1.86	6.3	28 6.5	11 26.7	+ 7 42.5	+0.6589	.5590	.0659	+59	- 7
B. A. C. 6666	6	+1.88	- 5.8	-27 14.6	13 45.6	+ 9 56.3	-0.1127	.5587	+.0718	+15	-51
ω Sagittarii	5	2.02	4.2	26 38.0	14 0 55.0	- 3 18.5	+0.1958	.5567	.1008	+34	-33
b Sagittarii	5	2.04	4.5	27 30.2	1 23.3	- 2 51.2	+1.1746	.5567	.1024	+63	+33
A Sagittarii	5	2.03	4.1	26 32.1	2 16.5	- 1 59.9	+0.2304	.5567	.1024	+35	-31
B. A. C. 7077	6	2.20	1.8	25 22.1	17 3.2	-11 44.9	+0.7963	.5520	.1404	+65	+ 1
B. A. C. 7108	6½	2.23	1.5	25 32.6	19 14.0	- 9 38.7	+1.2930	.5513	.1453	+65	+48
B. A. C. 7197	6	+2.25	- 0.1	-23 11.7	23 54.9	- 5 7.7	-0.4870	.5497	+.1564	+ 4	-76
B. A. C. 7237	6	3.29	- 0.2	24 15.4	15 1 57.2	- 3 9.6	+0.9552	.5488	.1609	+66	+11
γ Capricorni	6	2.33	+ 1.6	21 41.9	8 55.6	+ 3 34.1	-0.5638	.5463	.1761	+ 3	-82
27 Capricorni	6	2.32	1.9	21 3.6	9 22.5	+ 4 0.1	-1.1556	.5460	.1774	-35	-90
φ Capricorni	5½	2.36	2.3	21 10.3	12 6.4	+ 6 38.3	-0.5447	.5451	.1826	+ 4	-80
33 Capricorni	5½	+2.40	+ 2.8	-21 23.1	15 56.7	+10 20.7	+0.3950	.5438	+.1905	+54	-23

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′.	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
35 Capricorni	6	+2.43	+ 2.8	−21 44.3	15 17 20.3	+11 41.5	+1.0328	.5433	+.1930	+68	+15
37 Capricorni	6	2.44	3.7	20 38.6	20 48.3	− 8 57.6	+0.5669	.5416	.2000	+64	−14
ε Capricorni	4½	2.45	4.1	20 1.7	21 49.4	− 7 58.6	+0.1281	.5416	.2019	+41	−37
κ Capricorni	5	2.46	4.6	19 26.3	16 0 22.0	− 5 31.2	+0.0318	.5404	.2069	+36	−43
B. A. C. 7550	6	2.48	4.4	20 11.7	0 37.0	− 5 16.7	+0.8730	.5404	.2072	+70	+ 4
29 Aqua., *mult.*	6	2.53	6.5	17 34.1	9 29.3	+ 3 17.7	+0.0456	.5377	.2227	+39	−42
50 Aquarii	6	+2.58	+ 9.1	−14 9.9	19 44.9	−10 47.2	−1.1048	.5344	+.2387	−22	−90
B. A. C. 7835	6½	2.60	9.6	13 33.4	22 21.0	− 8 16.2	−1.1043	.5338	.2422	−22	−90
56 Aquarii	6	2.63	9.1	15 13.6	22 28.1	− 8 9.3	+0.6443	.5336	.2427	+74	−11
70 Aquarii	6	2.65	11.5	11 13.0	17 7 3.7	+ 0 9.3	−1.3388	.5320	.2538	−43	−90
74 Aquarii	6	2.69	11.7	12 17.0	9 24.1	+ 2 25.1	+0.3512	.5320	.2569	+60	−26
ψ¹ Aquarii	4½	2.76	13.5	9 46.2	20 0.1	−11 19.6	+0.5678	.5303	.2680	+75	−15
χ Aquarii	5½	+2.74	+14.0	− 8 24.6	20 29.3	−10 51.4	−0.6855	.5302	+.2685	+ 7	−90
ψ³ Aquarii	4½	2.77	13.6	9 52.0	20 58.7	−10 22.9	+0.9281	.5302	.2689	+80	+ 5
24 Piscium	6½	2.86	17.1	3 51.0	18 13 36.2	+ 5 42.2	−0.5796	.5306	.2812	+14	−80
27 Piscium	5½	2.89	17.3	4 15.0	16 19.9	+ 8 20.5	+0.5931	.5311	.2825	+80	−14
29 Piscium	5½	2.90	17.5	3 43.4	17 48.8	+ 9 46.5	+0.4826	.5315	.2833	+72	−20
4 Ceti	6	2.92	17.9	3 14.7	20 36.0	−11 31.6	+0.7918	.5320	.2845	+76	− 3
5 Ceti	6	+2.92	+17.9	− 3 8.6	20 49.2	−11 18.9	+0.7530	.5320	+.2846	+82	− 6
B. A. C. 5	6	2.92	18.0	2 55 1	21 3.9	−11 4.7	+0.5965	.5320	.2846	+81	−14
44 Piscium	6	2.96	19.8	+ 1 14.8	19 4 53.7	− 3 30.3	−1.3341	.5338	.2867	−36	−89
10 Ceti	6	2.98	19.2	− 0 44.5	5 27.9	− 2 57.2	+0.8170	.5343	.2868	+69	− 2
B. A. C. 274	6	3.10	21.7	+ 5 48.5	20 48.5	+11 52.8	−1.3008	.7401	.2858	−33	−84
73 Piscium	6½	3.12	21.6	4 59.2	23 7.0	− 9 53.4	+0.1744	.5410	.2851	+54	−35
77 Pisc., *mult.*	6	+3.13	+21.4	+ 4 14.6	23 33.0	− 9 28.2	+1.0349	.5414	+.2849	+90	+12
ε Piscium	5½	3.14	21.6	4 59.3	20 0 43.4	− 8 20.3	+0.6296	.5419	.2845	+84	−11
ζ¹ Piscium	4½	3.16	22.1	6 54.9	3 6.8	− 6 1.7	−0.5977	.5431	.2835	+14	−79
ζ² Piscium	5½	3.16	22.1	6 55.1	3 7.5	− 6 1.0	−0.5974	.5431	.2835	+14	−79
88 Piscium	6	3.16	22.0	6 20.1	3 34.2	− 5 35.3	+0.1053	.5435	.2834	+50	−38
54 Ceti	6	3.32	22.8	10 25.5	19 35.5	+ 9 52.7	+0.5264	.5535	.2718	+76	−15
B. A. C. 609	6	+3.35	+22.9	+11 41.4	23 17.4	−10 33.3	+0.2794	.5559	+.2682	+60	−27
19 Arietis	6	3.44	22.8	14 41.7	21 5 5.3	− 4 58.0	−1.1397	.5601	.2612	−20	−76
29 Arietis	6½	3.51	22.6	14 28.9	13 26.6	+ 3 4.9	+1.2042	.5678	.2481	+90	+31
40 Arietis	6	3.61	22.4	17 45.8	19 50.4	+ 9 14.2	−0.4574	.5717	.2385	+20	−61
π Arietis, *mult.*	5½	3.60	22.3	16 56.7	20 9.7	+ 9 32.9	+0.4226	.5720	.2380	+70	−15
ρ² Arietis	6	3.63	22.2	17 49.6	22 48.0	−11 54.9	+0.1794	.5742	.2331	+54	−27
ρ³ Arietis	6	+3.63	+22.1	+17 31.5	23 2.5	−11 40.9	+0.5308	.5742	+.2326	+78	− 9
54 Arietis	6½	3.68	21.7	18 18.9	22 3 50.2	− 7 4.3	+0.8478	.5782	.2230	+90	+ 9
δ Arietis	4½	3.71	21.6	19 15.3	5 7.4	− 5 50.2	+0.2115	.5792	.2204	+56	−24
ζ Arietis	4½	3.74	21.5	20 34.9	6 24.7	− 4 35.9	−0.8087	.5805	.2173	0	−70
B. A. C. 1032	6½	3.75	21.2	20 3.4	8 46.6	− 2 19.6	+0.2142	.5821	.2123	+57	−23
τ¹ Arietis	5	3.76	21.2	20 41.8	8 54.5	− 2 12.0	−0.3857	.5822	.2121	+24	−54
τ² Arietis	5½	+3.77	+21.1	+20 17.7	9 31.3	− 1 36.7	+0.1378	.5830	+.2104	+52	−26
65 Arietis	6	3.77	21.0	20 21.6	10 10.7	− 0 58.8	+0.2123	.5830	.2093	+56	−23
9 Tauri	6	3.85	20.1	22 47.9	15 1.7	+ 3 40.6	−1.1943	.5867	.1977	−30	−67
d Pleiadum	5			23 33.6	18 37.6	+ 7 7.8	−1.2482	.5895	.1884	−37	−67
η Tauri	3	3.90	19.7	23 43.1	19 4.2	+ 7 33.3	−1.3219	.5897	.1876	−51	−67
f Pleiadum	4			23 40.3	19 42.9	+ 8 10.5	−1.1550	.5903	.1857	−27	−67
h Pleiadum	5½			+23 45.3	19 43.3	+ 8 10.8	−1.2357	.5903	+.1857	−36	−66
32 Tauri	6	+3.90	+19.1	22 7.1	22 41.2	+11 1.5	+0.9124	.5924	.1778	+90	+18
33 Tauri	6	3.91	19.1	22 48.8	22 45.1	+11 5.2	+0.2409	.5924	.1778	+58	−18
36 Tauri	6	3.95	18.8	23 45.8	23 1 30.2	−10 16.4	−0.2144	.5943	.1699	+32	−40
χ¹ Tauri	5½	4.02	17.2	25 20.1	8 19.3	− 3 44.3	−0.6682	.5983	.1512	+ 7	−64
χ² Tauri	8½	+4.03	+17.2	+25 20.4	8 19.5	− 3 44.1	−0.6724	.5983	+.1512	+ 7	−64

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—						At Conjunction in R. A.								Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x′	y′	N'n.	S'n.
		s	″	°	′	d	h	m	h	m				°	°
62 Tauri	6	+4.00	+17.1	+24	0.6	23	8	52.6	− 3	12.4	+0.7204	.5985	+.1491	+90	+10
B. A. C. 1648	6½	4.18	11.9	27	49.8	24	5	45.3	− 7	12.9	−0.6273	.6062	.0824	+ 8	−57
β Tauri	2	4.20	11.4	28	30.1		7	40.1	− 5	23.1	−1.1434	.6062	.0758	−30	−62
B. A. C. 1746	6½	4.17	10.5	27	34.9		11	11.6	− 2	0.7	+0.0175	.6066	.0638	+45	−19
136 Tauri	5	4.17	8.8	27	34.9		17	31.3	+ 4	2.6	+0.3538	.6063	.0420	+67	0
B. A. C. 1882	6½	4.21	8.3	28	55.3		18	40.1	+ 5	8.5	−0.9395	.6062	+.0382	−12	−61
B. A. C 2097	6½	+4.15	+ 4.9	+28	17.6	25	7	3.2	− 7	0.2	−0.0993	.6027	−.0039	+38	−20
49 Aurigæ	5½	4.13	4.4	28	7.2		8	50.5	− 5	17.5	+0.0637	.6020	.0100	+48	−12
53 Aurigæ	6	4.16	4.0	29	5.4		9	59.7	− 4	11.2	−0.9298	.6014	.0137	−12	−61
54 Aurigæ	6	4.13	3.9	28	22.4		10	26.7	− 3	45.4	−0.2125	.6009	.0157	+32	−27
28 Geminor.	6	4.15	3.3	29	5.8		12	21.6	− 1	55.4	−0.9795	.5999	.0212	−16	−61
47 Geminor.	6	4.00	0.9	27	3.7		22	24.1	+ 7	42.0	+0.7000	.5936	.0546	+90	+17
53 Geminor.	6	+4.02	+ 0.2	+28	6.9	26	0	6.9	+ 9	20.6	−0.4679	.5925	−.0594	+18	−45
59 Geminor.	6½	3.99	− 0.7	27	52.7		3	24.8	−11	29.6	−0.4425	.5898	.0700	+19	−45
ι Geminorum	4	3.99	0.8	28	2.8		3	52.1	−11	3.4	−0.6449	.5895	.0711	+ 8	−58
b¹ Geminorum	5	3.98	1.3	28	22.5		5	15.0	− 9	43.9	−1.0832	.5884	.0751	−24	−62
b² Geminorum	5	3.98	1.2	28	10.4		5	26.2	− 9	33.1	−0.8913	.5882	.0762	− 8	−62
B. A. C. 2472	6	3.97	1.3	28	10.6		5	45.9	− 9	14.2	−0.9194	.5880	.0768	−10	−62
υ Geminorum	4½	3.92	1.6	27	10.4		7	49.8	− 7	15.3	−0.0590	.5863	.0830	+41	−25
c Geminorum	6	+3.85	− 2.2	+26	4.9		11	3.4	− 4	9.5	+0.7773	.5835	−.0922	+90	+18
φ Geminorum	5	3.84	3.4	27	5.3		14	44.8	− 0	36.8	−0.6169	.5801	.1028	+10	−58
ω¹ Cancri	6	3.76	3.8	25	44.1		17	44.6	+ 2	16.0	+0.4565	.5772	.1110	+74	− 1
ω² Cancri	6½	3.75	3.8	25	26.0		18	4.4	+ 2	35.0	+0.7311	.5769	.1116	+90	+14
ψ¹ Cancri	6½	3.74	4.9	26	12.7		21	29.4	+ 5	52.1	−0.4701	.5733	.1210	+18	−51
ψ² Cancri	6	3.72	4.8	25	53.2		21	35.8	+ 5	58.2	−0.1464	.5731	.1212	+36	−33
λ Cancri	6	3.63	5.4	24	24.9	27	1	45.4	+ 9	58.3	+0.8505	.5690	.1316	+90	+19
υ¹ Cancri, *mult.*	7	+3.61	− 6.1	+24	56.6		4	17.3	−11	35.4	−0.0367	.5666	−.1375	+42	−28
υ² Cancri	6½	3.59	6.2	24	33.6		5	6.5	−10	48.0	+0.2476	.5657	.1396	+59	−15
υ³ Cancri	6	3.57	6.4	24	30.1		6	19.6	− 9	37.7	+0.1352	.5646	.1423	+52	−20
32 Cancri	6	3.57	6.6	24	30.6		6	57.2	− 9	1.5	+0.0376	.5635	.1440	+46	−26
ξ Cancri	5	3.31	9.3	22	33.1		22	44.8	+ 6	12.2	−0.4637	.5468	.1773	+19	−56
79 Cancri	6	3.30	9.4	22	30.2		23	11.4	+ 6	37.9	−0.4929	.5468	.1780	+17	−58
B. A. C. 3138	6	3.27	9.4	21	47.9	28	0	40.4	+ 8	3.7	−0.0173	.5446	.1810	+43	−33
B. A. C. 3292	6½	+3.09	−11.2	+20	51.8		12	19.4	− 4	40.7	−1.2592	.5330	−.2004	−36	−60
η Leonis	3½	2.84	12.1	17	22.4	29	2	3.8	+ 8	37.3	−0.4397	.5199	.2193	+21	−61
42 Leonis	6	2.72	12.5	15	36.4		9	19.9	− 8	20.0	−0.1732	.5138	.2274	+35	−47
B. A. C. 3579	6	2.66	12.7	14	59.0		12	53.1	− 4	53.2	−0.3185	.5106	.2312	+28	−57
i Leonis	6	2.64	12.9	14	46.8		14	37.2	− 3	12.3	−0.5022	.5090	.2329	+18	−67
l Leonis	5	2.49	12.7	11	12.5		23	31.5	+ 5	26.4	+1.2465	.5025	.2406	+90	+32
B. A. C. 3837	6	+2.30	−13.2	+ 8	48.4	30	12	48.4	− 5	39.4	+0.6703	.4948	−.2492	+89	− 8
DECEMBER.															
B. A. C. 3996	6	+2.07	−13.9	+ 5	53.4	1	8	15.5	−10	44.3	−1.1384	.4865	−.2567	−18	−84
b Virginis	6	2.00	13.8	4	21.2		14	22.1	− 4	47.5	−1.0242	.4846	.2578	−11	−86
10 Virginis	6	1.93	13.6	+ 2	36.1		19	53.7	+ 0	35.2	−0.5254	.4835	.2585	+17	−75
13 Virginis	6	1.87	13.0	− 0	5.4	2	1	0.8	+ 5	34.2	+1.1176	.4827	.2587	+90	+17
η Virginis	3½	1.86	13.1	+ 0	1.8		1	43.5	+ 6	15.7	+0.8008	.4827	.2588	+90	− 3
38 Virginis	6	1.69	13.2	− 2	52.3		20	46.8	+ 0	48.9	−0.9061	.4824	.2562	− 4	−90
θ Virginis	4½	+1.62	−13.0	− 4	52.2	3	6	20.0	+10	7.0	−1.1241	.4837	−.2532	−18	−90
Mars				6	18.1		11	20.6	− 9	0.4	−0.8041	.4595	.2404	+ 2	−90
h Virginis	5	1.51	12.2	9	31.1		19	17.7	− 1	16.1	+0.7849	.4869	.2469	+74	− 3
Jupiter				8	22.5		22	30.7	+ 1	51.7	−1.2756	.4800	.2421	−33	−90
B. A. C. 4896	6	1.32	11.4	17	16.1	5	13	46.3	− 7	58.7	−0.3930	.5078	.2086	+16	−68
ι¹ Libræ	4½	1.29	11.2	19	19.0	6	0	17.7	+ 2	13.9	−0.2467	.5144	.1946	+22	−59
ι² Libræ	5½	+1.29	−11.2	−19	10.5		0	51.2	+ 2	46.4	−0.5118	.5150	−.1936	+ 8	−77
φ Sagittarii	3½	1.60	6.8	27	7.2	10	0	39.2	− 0	41.5	−1.0086	.5638	+.0226	−39	−90
τ Sagittarii	3½	1.68	6.1	27	51.2		9	38.7	+ 7	58.2	+0.0968	.5636	.0473	+23	−39
B. A. C. 6628	6	+1.75	− 5.5	−28	6.5		17	5.0	− 8	51.9	+0.7945	.5629	+.0671	+62	+ 2

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6666	6	+1.75	- 5.0	-27 14.6	10 19 22.9	- 6 39.0	+0.0276	.5622	+.0739	+22	-43
ω Sagittarii	5	1.84	3.8	26 38.0	11 6 28.7	+ 4 2.6	+0.3506	.5595	.1027	+42	-24
A Sagittarii	5	1.85	3.6	26 32.1	7 49.9	+ 5 20.8	+0.3874	.5592	.1060	+45	-22
BA.. C. 7077	6	1.97	1.7	25 22.1	22 34.8	- 4 25.9	+0.9727	.5535	.1422	+65	+13
B. A. C. 7197	6	2.00	0.4	23 11.7	12 5 26.9	+ 2 11.7	-0.3050	.5503	.1579	+14	-63
B. A. C. 7237	6	2.03	- 0.4	24 15.2	7 29.6	+ 4 10.1	+1.1431	.5494	.1624	+66	+26
χ Capricorni	6	+2.06	+ 1.1	-21 41.9	14 29.5	+10 55.4	-0.3728	.5460	+.1773	+13	-67
27 Capricorni	6	2.05	1.3	21 3.6	14 56.6	+11 21.6	-0.9667	.5460	.1779	-20	-90
φ Capricorni	5½	2.08	1.6	21 10.4	17 41.4	- 9 59.3	-0.3507	.5448	.1836	+14	-65
33 Capricorni	5½	2.12	2.0	21 23.1	21 33.4	- 6 15.2	+0.5970	.5428	.1913	+65	-12
35 Capricorni	6	2.14	2.1	21 44.3	22 57.6	- 4 53.8	+1.2397	.5423	.1936	+68	+34
37 Capricorni	6	2.16	2.8	20 38.6	13 2 27.4	- 1 31.1	+0.7748	.5404	.2004	+63	- 2
ε Capricorni	4½	+2.16	+ 3.1	-20 1.7	3 29.1	- 0 31.6	+0.3347	.5399	+.2022	+52	-27
κ Capricorni	5	2.17	3.6	19 26.3	6 3.3	+ 1 57 4	+0.2399	.5388	.2066	+47	-31
B. A. C. 7550	6	2.19	3.4	20 11.7	6 18.4	+ 2 12.1	+1.0867	.5388	.2068	+70	+19
29 Aqua., *mult.*	6	2.23	5.3	17 34.1	15 17.4	+10 53.2	+0.2614	.5348	.2218	+50	-30
50 Aquarii	6	2.28	7.6	14 9.9	14 1 42.9	- 3 1.7	-0.8933	.5303	.2373	- 8	-90
B. A. C. 7835	6½	2.30	8.1	13 33.4	4 21.9	- 0 27.8	-0.8921	.5293	.2412	- 8	-90
56 Aquarii	6	+2.32	+ 7.5	-15 13.6	4 29.2	- 0 20.8	+0.8738	.5293	+.2412	+75	+ 3
70 Aquarii	6	2.35	9.8	11 13.0	13 15.4	+ 8 8.5	-1.1267	.5265	.2514	-22	-90
74 Aquarii	6	2.40	9.8	12 17.0	15 39.0	+10 27.5	+0.5824	.5259	.2542	+74	-14
ψ¹ Aquarii	4½	2.47	11.7	9 46.2	15 2 31.0	- 3 1.1	+0.8041	.5235	.2646	+69	- 2
χ Aquarii	5½	2.46	12.2	8 24.6	3 0.9	- 2 32.3	-0.4659	.5235	.2649	+19	-72
ψ² Aquarii	4½	2.48	11.8	9 52.0	3 31.3	- 2 2.8	+1.1692	.5234	.2656	+80	+22
20 Piscium	6	+2.56	+15.3	- 3 27.5	18 11.1	-11 50.7	-1.4378	.5223	+.2750	-62	-90
24 Piscium	6½	2.60	15.4	3 51.0	20 38.3	- 9 28.1	-0.3641	.5224	.2764	+25	-65
27 Piscium	5½	2.63	15.5	4 15.1	23 27.3	- 6 44.4	+0.8255	.5226	.2779	+86	- 1
29 Piscium	5½	2.64	15.8	3 43.5	16 0 59.1	- 5 15.5	+0.7122	.5226	.2781	+86	- 8
B. A. C. 8365	6½	2.64	16.7	1 11.8	2 33.7	- 3 43.8	-1.4269	.5229	.2787	-52	-90
4 Ceti	6	2.67	16.1	3 14.7	3 52.0	- 2 28.0	+1.0249	.5229	.2790	+87	+11
5 Ceti	6	+2.67	+16.2	- 3 8.6	4 5.6	- 2 14.9	+0.9856	.5229	+.2791	+87	+ 8
B. A. C. 5	6	2.67	16.3	- 2 55.1	4 20.8	- 2 0.1	+0.8266	.5230	.2792	+87	- 1
44 Piscium	6	2.73	18.2	+ 1 14.8	12 26.8	+ 5 50.5	-1.1424	.5246	.2808	-19	-89
10 Ceti	6	2.75	17.6	- 0 44.6	13 2.2	+ 6 24.8	+1.0440	.5246	.2809	+89	+12
B. A. C. 274	6	2.91	20.5	+ 5 48.5	17 4 56.1	- 2 11.7	-1.1272	.5299	.2794	-18	-84
73 Piscium	6½	2.94	20.2	4 59.2	7 19.7	+ 0 7.1	+0.3708	.5309	.2787	+65	-25
77 Pisc., *mult.*	6	2.95	20.0	4 14.5	7 46.7	+ 0 33.2	+1.2468	.5314	.2786	+90	+28
e Piscium	5½	+2.96	+20.3	+ 4 59.3	8 59.6	+ 1 43.8	+0.8321	.5319	+.2780	+90	0
ζ¹ Piscium	4½	2.99	21.0	6 54.8	11 28.4	+ 4 7.7	-0.4206	.5331	.2770	+23	-67
ζ² Piscium	5½	2.99	21.0	6 55.0	11 29.1	+ 4 8.4	-0.4204	.5331	.2770	+23	-67
88 Piscium	6	3.00	20.8	6 20.1	11 56.7	+ 4 35.1	+0.2943	.5332	.2768	+61	-28
54 Ceti	6	3.20	22.1	10 25.5	18 4 33.1	- 3 21.8	+0.6960	.5434	.2653	+90	- 6
B. A. C. 609	6	3.27	22.3	11 41.4	8 22.8	+ 0 20.0	+0.4378	.5461	.2615	+70	-19
19 Arietis	6	3.37	23.0	14 41.7	14 22.7	+ 6 7.4	-1.0165	.5507	.2547	-12	-76
29 Arietis	6½	+3.49	+22.4	+14 28.9	23 0.6	- 9 33.1	+1.3483	.5573	+.2433	+90	+48
40 Arietis	6	3.62	22.7	17 45.8	19 5 36.5	- 3 11.5	-0.3524	.5630	.2327	+25	-55
π Arietis	5½	3.61	22.4	16 56.7	5 56.4	- 2 52.4	+0.5403	.5632	.2323	+78	- 9
ρ² Arietis	6	3.67	22.4	17 49.6	8 39.4	- 0 15.4	+0.2874	.5655	.2274	+61	-21
ρ³ Arietis	6	3.66	22.3	17 31.5	8 54.3	- 0 1.1	+0.6434	.5657	.2271	+88	- 3
54 Arietis	6½	3.75	21.9	18 19.0	13 50.2	+ 4 43.7	+0.9537	.5700	.2178	+90	+16
δ Arietis	4½	3.78	22.0	19 15.3	15 9.5	+ 6 0.0	+0.3058	.5709	.2154	+62	-19
ζ Arietis	4½	+3.82	+22.1	+20 34.9	16 29.0	+ 7 16.6	-0.7311	.5725	+.2123	+ 5	-69
B. A. C. 1032	6½	3.84	21.7	20 3.4	18 54.6	+ 9 36.5	+0.3003	.5744	.2075	+62	-18
τ¹ Arietis	5	3.86	21.8	20 41.8	19 2.8	+ 9 44.4	-0.3077	.5744	.2073	+28	-49
τ² Arietis	5½	3.86	21.6	20 17.7	19 40.4	+10 20.5	+0.2213	.5750	.2057	+57	-22
65 Arietis	6	3.87	21.5	20 21.6	20 20.9	+10 59.5	+0.2953	.5754	.2047	+62	-18
9 Tauri	6	3.99	21.3	22 47.9	20 1 19.1	- 8 13.8	-1.1397	.5797	.1935	-25	-67
d Pleiadum	5	+4.07	+20.8	+23 33.6	4 59.9	- 4 41.7	-1.2017	.5832	+.1845	-32	-67

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1874.0. Δα	Red'ns from 1874.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
η Tauri	3	+4.07	+20.7	+23 43.2	20 5 27.0	− 4 15.8	−1.2776	.5837	+.1831	−42	−67
f Pleiadum	4	4.08	20.7	23 40.3	6 6.6	− 3 37.7	−1.1099	.5842	.1819	−22	−67
h Pleiadum	5½	4.09	20.7	23 45.3	6 7.1	− 3 37.2	−1.1910	.5840	.1818	−30	−66
32 Tauri	6	4.08	19.8	22 7.1	9 8.6	− 0 43.0	+0.9739	.5861	.1742	+90	+23
33 Tauri	6	4.10	19.9	22 48.8	9 12.6	− 0 39.2	+0.2950	.5861	.1741	+62	−15
36 Tauri	6	4.16	19.6	23 45.8	12 1.1	+ 2 2.6	−0.1712	.5884	.1668	+35	−38
χ^1 Tauri	5½	+4.29	+18.3	+25 20.1	18 57.5	+ 8 42.0	−0.6442	.5936	+.1474	+ 9	−62
χ^2 Tauri	8½	4.29	18.3	25 20.4	18 57.7	+ 8 42.2	−0.6482	.5936	.1474	+ 9	−62
62 Tauri	6	4.26	18.0	24 0.6	19 31.3	+ 9 14.4	+0.7549	.5942	.1454	+90	+12
B. A. C. 1648	6½	4.61	13.1	27 49.8	21 16 38.2	+ 5 28.1	−0.7488	.6049	.0798	+ 7	−58
β Tauri	2	4.65	12.6	28 30.1	18 33.6	+ 7 18.6	−1.1714	.6055	.0734	−33	−62
B. A. C. 1746	6½	4.65	11.5	27 34.9	22 6.2	+10 42.1	−0.0133	.6062	.0620	+44	−20
136 Tauri	5	+4.69	+ 9.5	+27 34.9	22 4 26.9	− 7 13.5	+0.3094	.6069	+.0397	+64	− 2
B. A. C. 1882	6½	4.75	9.2	28 55.3	5 35.7	− 6 7.6	−0.9883	.6076	+.0360	−16	−61
B. A. C. 2097	6½	4.77	5.3	28 17.6	17 57.3	+ 5 42.1	−0.1736	.6052	−.0060	+34	−24
49 Aurigæ	5½	4.77	4.7	28 7.2	19 44.0	+ 7 24.2	−0.0147	.6046	.0122	+43	−16
53 Aurigæ	6	4.81	4.3	29 5.4	20 52.9	+ 8 30.1	−1.0090	.6045	.0160	−18	−61
54 Aurigæ	6	4.78	4.2	28 22.4	21 19.7	+ 8 55.8	−0.2939	.6042	0171	+28	−31
28 Geminor.	6	+4.81	+ 3.5	+29 5.8	23 13.8	+10 45.0	−1.0632	.6035	−.0235	−23	−61
47 Geminor.	6	4.72	+ 0.4	27 3.7	23 9 11.0	− 3 42.9	+0.5901	.5984	.0564	+87	+11
53 Geminor.	6	4.76	− 0.2	28 6.8	10 52.8	− 2 5.4	−0.5766	.5972	.0623	+11	−53
59 Geminor.	6½	4.74	1.2	27 52.7	14 8.3	+ 1 2.1	−0.5580	.5953	.0721	+13	−52
ι Geminor.	4	4.74	1.4	28 2.7	14 35.2	+ 1 27.8	−0.7605	.5947	.0740	0	−62
b^1 Geminor.	5	4.75	1.9	28 22.5	15 57.0	+ 2 46.3	−1.1989	.5938	.0778	−37	−62
b^2 Geminor.	5	+4.74	− 1.9	+28 10.4	16 8.1	+ 2 56 9	−1.0086	.5938	−.0783	−17	−62
B. A. C. 2472	6	4.74	2.0	28 10.6	16 27.6	+ 3 15.7	−1.0373	.5932	.0798	−20	−62
υ Geminor.	4½	4.69	2.6	27 10.4	18 29.7	+ 5 12.8	−0.1858	.5916	.0860	+34	−31
c Geminor.	6	4.63	3.4	26 4.9	21 40.6	+ 8 16.0	+0.6387	.5891	.0952	+90	+10
φ Geminor.	5	4.65	4.5	27 5.3	24 1 18.5	+11 45.1	−0.7540	.5864	.1053	+ 1	−63
ω^1 Cancri	6	4.58	5.4	25 44.1	4 15.4	− 9 25.1	+0.3056	.5837	.1138	+63	− 9
ω^2 Cancri	6½	+4.56	− 5.4	+25 25.9	4 34.9	− 9 6.3	+0.5776	.5830	−.1151	+85	+ 5
ψ^1 Cancri	6½	4.57	6.5	26 12.9	7 56.3	− 5 52.9	−0.6216	.5801	.1239	+ 9	−60
ψ^2 Cancri	6	4.56	6.5	25 53.1	8 2.5	− 5 46.8	−0.3005	.5800	.1242	+27	−41
λ Cancri	6	4.47	7.4	24 24.9	12 7.6	− 1 51.3	+0.6798	.5761	.1348	+90	+ 9
υ^2 Cancri	6½	4.45	8.4	24 33.5	15 24.9	+ 1 18.5	+0.0752	.5724	.1435	+49	−23
υ^3 Cancri	6	4.44	8.7	24 30.1	16 36.5	+ 2 27.4	−0.0385	.5712	.1462	+42	−29
32 Cancri	6	+4.43	− 8.9	+24 30.6	17 13.3	+ 3 2.8	−0.1366	.5710	−.1473	+36	−35
ξ Cancri	5	4.22	12.5	22 33.0	25 8 40.8	− 6 3.8	−0.6630	.5544	.1814	+ 8	−67
79 Cancri	6	4.21	12.6	22 30.2	9 6.9	− 5 38.7	−0.6926	.5541	.1820	+ 6	−68
B. A. C. 3138	6	4.17	12.8	21 47.8	10 33.8	− 4 14.8	−0.2245	.5523	.1848	+32	−43
η Leonis	3½	3.78	16.7	17 22.3	26 11 21.7	− 4 16.8	−0.6836	.5275	.2234	+ 8	−73
42 Leonis	6	3.66	17.5	15 36.3	18 27.7	+ 2 35.8	−0.4300	.5204	.2317	+22	−62
B. A. C. 3579	6	+3.61	−17.8	+14 58.9	21 56.0	+ 5 57.6	−0.5782	.5176	−.2352	+14	−71
i Leonis	6	3.58	18.0	14 46.7	22 37.7	+ 6 36.2	−0.7622	.5159	.2395	+ 4	−73
l Leonis	5	3.42	18.2	11 12.4	27 8 20.1	− 7 57.2	+0.9581	.5093	.2441	+90	+10
B. A. C. 3837	6	3.24	19.0	8 44.7	21 20.5	+ 4 40.5	+0.3764	.5004	.2523	+66	−23
B. A. C. 3996	6	3.00	19.9	5 53.3	28 16 26.4	− 0 45.7	−1.4263	.4903	.2589	−53	−84
b Virginis	6	2.93	19.9	4 21.1	22 27.4	+ 5 5.6	−1.3149	.4881	.2597	−34	−86
10 Virginis	6	+2 86	−19.6	+ 2 36.0	29 3 54.3	+10 23.6	−0.8205	.4869	−.2601	+ 2	−67
13 Virginis	6	2.79	19.0	− 0 5.5	8 57.4	− 8 41.5	+0.8117	.4856	.2600	+71	− 2
η Virginis	3½	2.78	19.1	+ 0 1.7	9 39.6	− 8 0.4	+0.4968	.4854	.2600	+74	−19
38 Virginis	6	2.60	19.1	− 2 52.4	30 4 31.2	+10 21.0	−1.1926	.4840	.2563	−23	−90
θ Virginis	4½	2.51	18.7	4 52.3	13 59.2	− 4 26.2	−1.4031	.4844	.2527	−48	−90
k Virginis	5	2.40	17.4	9 31.2	31 2 54.1	+ 8 8.0	+0.5113	.4871	.2459	+72	−18
86 Virginis	6	+2.34	−16.8	−11 47.9	10 6 1	− 8 51.7	+1.2806	.4891	−.2411	+78	+33

NOTE.—B. A. C., British Association Catalogue.

WASHINGTON MEAN TIME.

JANUARY.

			d	h	m	s
I.	Occult.	Reapp.	1	2	17	
III.	Eclipse	Disapp. W.	1	17	35	41.1
I.	Shadow	Ingress	1	19	56	
III.	Eclipse	Reapp.	1	20	45	21.1
I.	Transit	Ingress	1	21	9	
I.	Shadow	Egress	1	22	13	
III.	Occult.	Disapp.	1	22	32	
I.	Transit	Egress	1	23	25	
III.	Occult.	Reapp.	2	1	36	
II.	Shadow	Ingress	2	9	31	
II.	Transit	Ingress W.	2	12	0	
II.	Shadow	Egress W.	2	12	13	
II.	Transit	Egress W.	2	14	38	
I.	Eclipse	Disapp. W.	2	17	18	1.1
I.	Occult.	Reapp.	2	20	45	
I.	Shadow	Ingress W.	3	14	24	
I.	Transit	Ingress W.	3	15	37	
I.	Shadow	Egress W.	3	16	42	
I.	Transit	Egress W.	3	17	53	
II.	Eclipse	Disapp.	4	3	44	29.6
II.	Occult.	Reapp.	4	8	48	
I.	Eclipse	Disapp. W.	4	11	46	15.2
I.	Occult.	Reapp. W.	4	15	12	
IV.	Shadow	Ingress	5	2	28	
IV.	Shadow	Egress	5	5	53	
III.	Shadow	Ingress	5	7	15	
I.	Shadow	Ingress	5	8	52	
I.	Transit	Ingress	5	10	5	
III.	Shadow	Egress	5	10	36	
I.	Shadow	Egress	5	11	10	
III.	Transit	Ingress W.	5	12	12	
I.	Transit	Egress W.	5	12	21	
IV.	Transit	Ingress W.	5	14	24	
III.	Transit	Egress W.	5	15	17	
IV.	Transit	Egress W.	5	16	17	
II.	Shadow	Ingress	5	22	47	
II.	Transit	Ingress	6	1	14	
II.	Shadow	Egress	6	1	30	
II.	Transit	Egress	6	3	52	
I.	Eclipse	Disapp.	6	6	14	33.9
I.	Occult.	Reapp.	6	9	40	
I.	Shadow	Ingress	7	3	20	
I.	Transit	Ingress	7	4	33	
I.	Shadow	Egress	7	5	38	
I.	Transit	Egress	7	6	49	
II.	Eclipse	Disapp. W.	7	17	2	17.4
II.	Occult.	Reapp.	7	22	4	
I.	Eclipse	Disapp.	8	0	42	47.9
I.	Occult.	Reapp.	8	4	8	
III.	Eclipse	Disapp.	8	21	33	50.9
I.	Shadow	Ingress	8	21	49	
I.	Transit	Ingress	8	23	1	
I.	Shadow	Egress	9	0	7	
III.	Eclipse	Reapp.	9	0	42	42.3
I.	Transit	Egress	9	1	17	
III.	Occult.	Disapp.	9	2	22	
III.	Occult.	Reapp.	9	5	24	
II.	Shadow	Ingress W.	9	12	3	
II.	Transit	Ingress W.	9	14	28	
II.	Shadow	Egress W.	9	14	47	
II.	Transit	Egress W.	9	17	6	
I.	Eclipse	Disapp.	9	19	11	4.4
I.	Occult.	Reapp.	9	22	35	
I.	Shadow	Ingress W.	10	16	17	
I.	Transit	Ingress W.	10	17	28	
I.	Shadow	Egress	10	18	35	
I.	Transit	Egress	10	19	44	
II.	Eclipse	Disapp.	11	6	19	23.6
II.	Occult.	Reapp. W.	11	11	18	
I.	Eclipse	Disapp. W.	11	13	39	18.6
I.	Occult.	Reapp. W.	11	17	3	
I.	Shadow	Ingress	12	10	45	
III.	Shadow	Ingress W.	12	11	13	
I.	Transit	Ingress W.	12	11	55	
I.	Shadow	Egress W.	12	13	3	
I.	Transit	Egress W.	12	14	11	
III.	Shadow	Egress W.	12	14	33	
III.	Transit	Ingress W.	12	15	59	
III.	Transit	Egress	12	19	0	
II.	Shadow	Ingress	13	1	20	
II.	Transit	Ingress	13	3	42	
II.	Shadow	Egress	13	4	3	
II.	Transit	Egress	13	6	19	
I.	Eclipse	Disapp.	13	8	7	37.2
I.	Occult.	Reapp. W.	13	11	30	
IV.	Eclipse	Disapp. W.	13	13	23	26.8
IV.	Eclipse	Reapp. W.	13	16	26	38.4
IV.	Occult.	Disapp.	14	0	54	
IV.	Occult.	Reapp.	14	2	27	
I.	Shadow	Ingress	14	5	14	
I.	Transit	Ingress	14	6	22	
I.	Shadow	Egress	14	7	32	
I.	Transit	Egress	14	8	38	
II.	Eclipse	Disapp	14	19	37	18.9
II.	Occult.	Reapp.	15	0	32	
I.	Eclipse	Disapp.	15	2	35	51.7
I.	Occult.	Reapp.	15	5	57	
I.	Shadow	Ingress	15	23	42	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

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				d	h	m	s
I.	Transit	Ingress		16	0	50	
III.	Eclipse	Disapp.		16	1	31	26.3
I.	Shadow	Egress		16	2	0	
I.	Transit	Egress		16	3	6	
III.	Eclipse	Reapp.		16	4	39	28.7
III.	Occult.	Disapp.		16	6	2	
III.	Occult.	Reapp.		16	9	3	
II.	Shadow	Ingress	W.	16	14	37	
II.	Transit	Ingress	W.	16	16	55	
II.	Shadow	Egress	W.	16	17	20	
II.	Transit	Egress		16	19	32	
I.	Eclipse	Disapp.		16	21	4	8.3
I.	Occult.	Reapp.		17	0	25	
I.	Shadow	Ingress	W.	17	18	10	
I.	Transit	Ingress		17	19	18	
I.	Shadow	Egress		17	20	28	
I.	Transit	Egress		17	21	34	
II.	Eclipse	Disapp.		18	8	54	28.9
II.	Occult.	Reapp.	W.	18	13	45	
I.	Eclipse	Disapp.	W.	18	15	32	22.9
I.	Occult.	Reapp.		18	18	52	
I.	Shadow	Ingress	W.	19	12	39	
I.	Transit	Ingress	W.	19	13	45	
I.	Shadow	Egress	W.	19	14	57	
III.	Shadow	Ingress	W.	19	15	10	
I.	Transit	Egress	W.	19	16	1	
III.	Shadow	Egress		19	18	29	
III.	Transit	Ingress		19	19	44	
III.	Transit	Egress		19	22	45	
II.	Shadow	Ingress		20	3	54	
II.	Transit	Ingress		20	6	7	
II.	Shadow	Egress		20	6	36	
II.	Transit	Egress		20	8	44	
I.	Eclipse	Disapp.		20	10	0	41.6
I.	Occult.	Reapp.	W.	20	13	19	
I.	Shadow	Ingress		21	7	7	
I.	Transit	Ingress		21	8	12	
I.	Shadow	Egress		21	9	25	
I.	Transit	Egress	W.	21	10	28	
IV.	Shadow	Ingress		21	20	26	
II.	Eclipse	Disapp.		21	22	12	31.4
IV.	Shadow	Egress		21	23	43	
II.	Occult.	Reapp.		22	2	59	
I.	Eclipse	Disapp.		22	4	28	56.8
IV.	Transit	Ingress		22	7	19	
I.	Occult.	Reapp.		22	7	46	
IV.	Transit	Egress		22	8	31	
I.	Shadow	Ingress		23	1	35	
I.	Transit	Ingress		23	2	39	
I.	Shadow	Egress		23	3	53	
I.	Transit	Egress		23	4	55	
III.	Eclipse	Disapp.		23	5	29	7.4
III.	Eclipse	Reapp.		23	8	36	20.4
III.	Occult.	Disapp.		23	9	45	
III.	Occult.	Reapp.	W.	23	12	44	
II.	Shadow	Ingress	W.	23	17	10	
II.	Transit	Ingress		23	19	19	
II.	Shadow	Egress		23	19	53	
II.	Transit	Egress		23	21	56	
I.	Eclipse	Disapp.		23	22	57	13.3
I.	Occult.	Reapp.		24	2	13	
I.	Shadow	Ingress		24	20	4	
I.	Transit	Ingress		24	21	6	
I.	Shadow	Egress		24	22	22	
I.	Transit	Egress		24	23	22	
II.	Eclipse	Disapp.	W.	25	11	29	45.3
II.	Occult.	Reapp.	W.	25	16	11	
I.	Eclipse	Disapp.	W.	25	17	25	28.5
I.	Occult.	Reapp.		25	20	40	
I.	Shadow	Ingress	W.	26	14	32	
I.	Transit	Ingress	W.	26	15	33	
I.	Shadow	Egress	W.	26	16	50	
I.	Transit	Egress	W.	26	17	49	
III.	Shadow	Ingress		26	19	8	
III.	Shadow	Egress		26	22	26	
III.	Transit	Ingress		26	23	18	
III.	Transit	Egress		27	2	17	
II.	Shadow	Ingress		27	6	27	
II.	Transit	Ingress		27	8	31	
II.	Shadow	Egress		27	9	9	
II.	Transit	Egress	W.	27	11	7	
I.	Eclipse	Disapp.	W.	27	11	53	45.5
I.	Occult.	Reapp.	W.	27	15	7	
I.	Shadow	Ingress		28	9	0	
I	Transit	Ingress	W.	28	10	0	
I.	Shadow	Egress	W.	28	11	18	
I.	Transit	Egress	W.	28	12	16	
II.	Eclipse	Disapp.		29	0	47	55.2
II.	Occult.	Reapp.		29	5	23	
I.	Eclipse	Disapp.		29	6	22	3.4
I.	Occult.	Reapp.		29	9	34	
I.	Shadow	Ingress		30	3	29	
I.	Transit	Ingress		30	4	27	
I.	Shadow	Egress		30	5	47	
I.	Transit	Egress		30	6	43	
IV.	Eclipse	Disapp.		30	7	23	12.6
III.	Eclipse	Disapp.		30	9	26	26.5
IV.	Eclipse	Reapp.	W.	30	10	17	18.8

W.—Visible at Washington.

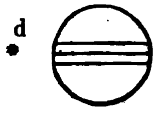
WASHINGTON MEAN TIME.

JANUARY.

			d	h	m	s				d	h	m	s
III.	Eclipse	Reapp. W.	30	12	32	49.5	II.	Shadow	Egress	30	22	26	
III.	Occult.	Disapp. W.	30	13	20		II.	Transit	Egress	31	0	17	
III.	Occult.	Reapp. W.	30	16	18		I.	Eclipse	Disapp.	31	0	50	20.6
IV.	Occult.	Disapp. W.	30	17	22		I.	Occult.	Reapp.	31	4	1	
IV.	Occult.	Reapp.	30	18	10		I.	Shadow	Ingress	31	21	57	
II.	Shadow	Ingress	30	19	44		I.	Transit	Ingress	31	22	54	
II.	Transit	Ingress	30	21	41								

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



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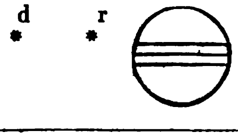

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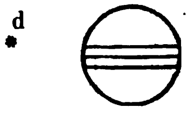

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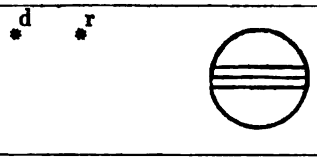

FEBRUARY.

			d	h	m	s				d	h	m	s
I.	Shadow	Egress	1	0	15		II.	Occult.	Reapp.	5	7	45	
I.	Transit	Egress	1	1	10		I.	Eclipse	Disapp.	5	8	15	12.8
II.	Eclipse	Disapp. W.	1	14	5	13.3	I.	Occult.	Reapp. W.	5	11	21	
II.	Occult.	Reapp.	1	18	34		I.	Shadow	Ingress	6	5	22	
I.	Eclipse	Disapp.	1	19	18	36.4	I.	Transit	Ingress	6	6	14	
I.	Occult.	Reapp.	1	22	28		I.	Shadow	Egress	6	7	40	
I.	Shadow	Ingress W.	2	16	25		I.	Transit	Egress	6	8	30	
I.	Transit	Ingress W.	2	17	21		III.	Eclipse	Disapp. W.	6	13	23	48.1
I.	Shadow	Egress	2	18	43		III.	Eclipse	Reapp. W.	6	16	29	20.7
I.	Transit	Egress	2	19	37		III.	Occult.	Disapp. W.	6	16	50	
III.	Shadow	Ingress	2	23	6		III.	Occult.	Reapp.	6	19	47	
III.	Shadow	Egress	3	2	24		II.	Shadow	Ingress	6	22	17	
III.	Transit	Ingress	3	2	52		II.	Transit	Ingress	7	0	1	
III.	Transit	Egress	3	5	50		II.	Shadow	Egress	7	0	59	
II.	Shadow	Ingress	3	9	0		II.	Transit	Egress	7	2	37	
II.	Transit	Ingress W.	3	10	51		I.	Eclipse	Disapp.	7	2	43	30.9
II.	Shadow	Egress W.	3	11	42		I.	Occult.	Reapp.	7	5	47	
II.	Transit	Egress W.	3	13	27		IV.	Shadow	Ingress W.	7	14	26	
I.	Eclipse	Disapp. W.	3	13	46	56.0	IV.	Shadow	Egress W.	7	17	34	
I.	Occult.	Reapp. W.	3	16	54		IV.	Transit	Ingress	7	23	21	
I.	Shadow	Ingress W.	4	10	54		IV.	Transit	Egress	7	23	45	
I.	Transit	Ingress W.	4	11	47		I.	Shadow	Ingress	7	23	51	
I.	Shadow	Egress W.	4	13	12		I.	Transit	Ingress	8	0	40	
I.	Transit	Egress W.	4	14	3		I.	Shadow	Egress	8	2	9	
II.	Eclipse	Disapp.	5	3	23	30.5	I.	Transit	Egress	8	2	56	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

FEBRUARY.

			d	h	m	s				d	h	m	s
II.	Eclipse	Disapp. W.	8	16	40	52.9	IV.	Occult	Reapp. W.	16	9	2	
II.	Occult.	Reapp.	8	20	55		I.	Shadow	Ingress	16	20	13	
I.	Eclipse	Disapp.	8	21	11	47.6	I.	Transit	Ingress	16	20	53	
I.	Occult.	Reapp.	9	0	14		I.	Shadow	Egress	16	22	30	
I.	Shadow	Ingress	9	18	19		I.	Transit	Egress	16	23	9	
I.	Transit	Ingress	9	19	7		III.	Shadow	Ingress	17	7	3	
I.	Shadow	Egress	9	20	37		III.	Transit	Ingress W.	17	9	45	
I.	Transit	Egress	9	21	23		III.	Shadow	Egress W.	17	10	18	
III.	Shadow	Ingress	10	3	4		III.	Transit	Egress W.	17	12	42	
III.	Transit	Ingress	10	6	20		II.	Shadow	Ingress W.	17	14	7	
III.	Shadow	Egress	10	6	21		II.	Transit	Ingress W.	17	15	26	
III.	Transit	Egress W.	10	9	18		II.	Shadow	Egress W.	17	16	49	
II.	Shadow	Ingress W.	10	11	34		I.	Eclipse	Disapp. W.	17	17	33	24.8
II.	Transit	Ingress W.	10	13	10		II.	Transit	Egress	17	18	2	
II.	Shadow	Egress W.	10	14	16		I.	Occult.	Reapp.	17	20	25	
I.	Eclipse	Disapp. W.	10	15	40	8.1	I.	Shadow	Ingress W.	18	14	42	
II.	Transit	Egress W.	10	15	46		I.	Transit	Ingress W.	18	15	20	
I.	Occult.	Reapp.	10	18	40		I.	Shadow	Egress W.	18	16	59	
I.	Shadow	Ingress W.	11	12	48		I.	Transit	Egress W.	18	17	36	
I.	Transit	Ingress W.	11	13	33		II.	Eclipse	Disapp. W.	19	8	35	16.5
I.	Shadow	Egress W.	11	15	6		I.	Eclipse	Disapp. W.	19	12	1	44.3
I.	Transit	Egress W.	11	15	49		II.	Occult.	Reapp. W.	19	12	24	
II.	Eclipse	Disapp.	12	5	59	17.5	I.	Occult.	Reapp. W.	19	14	51	
II.	Occult.	Reapp. W.	12	10	5		I.	Shadow	Ingress W.	20	9	10	
I.	Eclipse	Disapp. W.	12	10	8	26.2	I.	Transit	Ingress W.	20	9	46	
I.	Occult.	Reapp. W.	12	13	6		I.	Shadow	Egress W.	20	11	27	
I.	Shadow	Ingress	13	7	16		I.	Transit	Egress W.	20	12	2	
I.	Transit	Ingress	13	8	0		III.	Eclipse	Disapp.	20	21	19	27.4
I.	Shadow	Egress W.	13	9	34		III.	Occult.	Reapp.	21	2	35	
I.	Transit	Egress W.	13	10	16		II.	Shadow	Ingress	21	3	23	
III.	Eclipse	Disapp. W.	13	17	21	35.1	II.	Transit	Ingress	21	4	34	
III.	Occult.	Reapp.	13	23	12		II.	Shadow	Egress	21	6	5	
II.	Shadow	Ingress	14	0	50		I.	Eclipse	Disapp.	21	6	30	4.4
II.	Transit	Ingress	14	2	18		II.	Transit	Egress	21	7	10	
II.	Shadow	Egress	14	3	32		I.	Occult.	Reapp. W.	21	9	17	
I.	Eclipse	Disapp.	14	4	36	44.2	I.	Shadow	Ingress	22	3	39	
II.	Transit	Egress	14	4	54		I.	Transit	Ingress	22	4	12	
I.	Occult.	Reapp.	14	7	32		I.	Shadow	Egress	22	5	56	
I.	Shadow	Ingress	15	1	45		I.	Transit	Egress	22	6	28	
I.	Transit	Ingress	15	2	26		II.	Eclipse	Disapp.	22	21	52	48.6
I.	Shadow	Egress	15	4	2		I.	Eclipse	Disapp.	23	0	58	24.0
I.	Transit	Egress	15	4	42		II.	Occult.	Reapp.	23	1	32	
II.	Eclipse	Disapp.	15	19	16	44.7	I.	Occult.	Reapp.	23	3	43	
I.	Eclipse	Disapp.	15	23	5	3.4	I.	Shadow	Ingress	23	22	7	
II.	Occult.	Reapp.	15	23	14		I.	Transit	Ingress	23	22	38	
IV.	Eclipse	Disapp.	16	1	23	49.0	I.	Shadow	Egress	24	0	24	
I.	Occult.	Reapp.	16	1	59		I.	Transit	Egress	24	0	54	
IV.	Eclipse	Reapp.	16	4	8	12.0	IV.	Shadow	Ingress W.	24	8	26	
IV.	Occult.	Disapp.	16	8	50		III.	Shadow	Ingress W.	24	11	1	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

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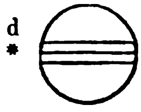
			d	h	m	s
IV.	Shadow	Egress W.	24	11	25	
III.	Transit	Ingress W.	24	13	6	
III.	Shadow	Egress W.	24	14	16	
IV.	Transit	Ingress W.	24	14	21	
IV.	Transit	Egress W.	24	14	22	
III.	Transit	Egress W.	24	16	2	
II.	Shadow	Ingress W.	24	16	40	
II.	Transit	Ingress	24	17	41	
II.	Shadow	Egress	24	19	22	
I.	Eclipse	Disapp.	24	19	26	46.6
II.	Transit	Egress	24	20	17	
I.	Occult.	Reapp.	24	22	9	
I.	Shadow	Ingress W.	25	16	36	
I.	Transit	Ingress W.	25	17	4	
I.	Shadow	Egress	25	18	53	
I.	Transit	Egress	25	19	20	
II.	Eclipse	Disapp. W.	26	11	11	26.8
I.	Eclipse	Disapp. W.	26	13	55	8.0
II.	Occult.	Reapp. W.	26	14	41	
I.	Occult.	Reapp. W.	26	16	35	
I	Shadow	Ingress W.	27	11	4	
I.	Transit	Ingress W.	27	11	30	
I.	Shadow	Egress W.	27	13	21	
I.	Transit	Egress W.	27	13	46	
III.	Eclipse	Disapp.	28	1	18	2.7
III.	Occult.	Reapp.	28	5	55	
II.	Shadow	Ingress	28	5	57	
II.	Transit	Ingress	28	6	48	
I.	Eclipse	Disapp. W.	28	8	23	29.5
II.	Shadow	Egress W.	28	8	38	
II.	Transit	Egress W.	28	9	24	
I.	Occult.	Reapp. W.	28	11	1	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



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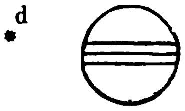
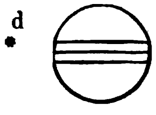
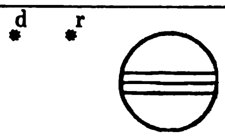


II.



IV.



MARCH.

			d	h	m	s
I.	Shadow	Ingress	1	5	33	
I.	Transit	Ingress	1	5	56	
I.	Shadow	Egress W.	1	7	50	
I.	Transit	Egress W.	1	8	12	
II.	Eclipse	Disapp.	2	0	29	3.7
I.	Eclipse	Disapp.	2	2	51	50.7
II.	Occult.	Reapp.	2	3	49	
I.	Occult.	Reapp.	2	5	27	
I.	Shadow	Ingress	3	0	1	
I.	Transit	Ingress	3	0	22	
I.	Shadow	Egress	3	2	18	
I.	Transit	Egress	3	2	38	
III.	Shadow	Ingress W.	3	15	0	
III.	Transit	Ingress W.	3	16	24	
III.	Shadow	Egress	3	18	14	
II.	Shadow	Ingress	3	19	14	
III.	Transit	Egress	3	19	21	
II.	Transit	Ingress	3	19	55	
I.	Eclipse	Disapp.	3	21	20	14.6
II.	Shadow	Egress	3	21	55	
II.	Transit	Egress	3	22	30	
I.	Occult.	Reapp.	3	23	53	
I.	Shadow	Ingress	4	18	30	
I.	Transit	Ingress	4	18	48	
IV.	Eclipse	Disapp.	4	19	25	2.0
I.	Shadow	Egress	4	20	47	
I.	Transit	Egress	4	21	4	
IV.	Eclipse	Reapp.	4	21	58	57.4
IV.	Occult.	Disapp.	4	23	10	
IV.	Occult.	Reapp.	4	23	37	
II.	Eclipse	Disapp. W.	5	13	47	48.6
I.	Eclipse	Disapp. W.	5	15	48	37.9

W.—Visible at Washington.

WASHINGTON MEAN TIME.

MARCH.

				d	h	m	s
II.	Occult.	Reapp.	W.	5	16	58	
I.	Occult.	Reapp.		5	18	18	
I.	Shadow	Ingress	W.	6	12	58	
I.	Transit	Ingress	W.	6	13	14	
I.	Shadow	Egress	W.	6	15	15	
I.	Transit	Egress	W.	6	15	30	
III.	Eclipse	Disapp.		7	5	16	9.2
II.	Shadow	Ingress	W.	7	8	30	
II.	Transit	Ingress	W.	7	9	1	
III.	Occult.	Reapp.	W.	7	9	12	
I.	Eclipse	Disapp.	W.	7	10	17	0.9
II.	Shadow	Egress	W.	7	11	11	
II.	Transit	Egress	W.	7	11	37	
I.	Occult.	Reapp.	W.	7	12	44	
I.	Shadow	Ingress	W.	8	7	27	
I.	Transit	Ingress	W.	8	7	40	
I.	Shadow	Egress	W.	8	9	44	
I.	Transit	Egress	W.	8	9	56	
II.	Eclipse	Disapp.		9	3	5	30.0
I.	Eclipse	Disapp.		9	4	45	23.9
II.	Occult.	Reapp.		9	6	5	
I.	Occult.	Reapp.		9	7	10	
I.	Shadow	Ingress		10	1	55	
I.	Transit	Ingress		10	2	6	
I.	Shadow	Egress		10	4	12	
I.	Transit	Egress		10	4	22	
III.	Shadow	Ingress		10	18	58	
III.	Transit	Ingress		10	19	41	
II.	Shadow	Ingress		10	21	47	
II.	Transit	Ingress		10	22	7	
III.	Shadow	Egress		10	22	11	
III.	Transit	Egress		10	22	39	
I.	Eclipse	Disapp.		10	23	13	49.3
II.	Shadow	Egress		11	0	28	
II.	Transit	Egress		11	0	43	
I.	Occult.	Reapp.		11	1	36	
I.	Shadow	Ingress		11	20	24	
I.	Transit	Ingress		11	20	32	
I.	Shadow	Egress		11	22	41	
I.	Transit	Egress		11	22	48	
II.	Eclipse	Disapp.	W.	12	16	24	20.6
I.	Eclipse	Disapp.		12	17	42	14.4
II.	Occult.	Reapp.		12	19	13	
I.	Occult.	Reapp.		12	20	2	
IV.	Shadow	Ingress		13	2	28	
IV.	Transit	Ingress		13	4	13	
IV.	Transit	Egress		13	5	8	
IV.	Shadow	Egress		13	5	16	
I.	Shadow	Ingress	W.	13	14	53	
I.	Transit	Ingress	W.	13	14	58	
I.	Shadow	Egress	W.	13	17	10	
I.	Transit	Egress	W.	13	17	14	
III.	Eclipse	Disapp.	W.	14	9	14	25.8
II.	Shadow	Ingress	W.	14	11	3	
II.	Transit	Ingress	W.	14	11	14	
I.	Eclipse	Disapp.	W.	14	12	10	39.2
III.	Occult.	Reapp.	W.	14	12	29	
II.	Shadow	Egress	W.	14	13	44	
II.	Transit	Egress	W.	14	13	50	
I.	Occult.	Reapp.	W.	14	14	28	
I.	Shadow	Ingress	W.	15	9	21	
I.	Transit	Ingress	W.	15	9	24	
I.	Shadow	Egress	W.	15	11	38	
I.	Transit	Egress	W.	15	11	40	
II.	Eclipse	Disapp.		16	5	42	6.8
I.	Occult.	Disapp.		16	6	37	
II.	Occult.	Reapp.	W.	16	8	20	
I.	Occult.	Reapp.	W.	16	8	54	
I.	Shadow	Ingress		17	3	50	
I.	Transit	Ingress		17	3	50	
I.	Shadow	Egress		17	6	6	
I.	Transit	Egress		17	6	6	
III.	Transit	Ingress		17	22	56	
III.	Shadow	Ingress		17	22	57	
II.	Transit	Ingress		18	0	20	
II.	Shadow	Ingress		18	0	21	
I.	Occult.	Disapp.		18	1	4	
III.	Transit	Egress		18	1	56	
III.	Shadow	Egress		18	2	9	
II.	Transit	Egress		18	2	56	
II.	Shadow	Egress		18	3	1	
I.	Eclipse	Reapp.		18	3	19	5.7
I.	Transit	Ingress		18	22	16	
I.	Shadow	Ingress		18	22	19	
I.	Transit	Egress		19	0	32	
I.	Shadow	Egress		19	0	35	
II.	Occult.	Disapp.		19	18	53	
I.	Occult.	Disapp.		19	19	30	
II.	Eclipse	Reapp.		19	21	37	56.4
I.	Eclipse	Reapp.		19	21	47	31.6
I.	Transit	Ingress	W.	20	16	42	
I.	Shadow	Ingress	W.	20	16	47	
I.	Transit	Egress		20	18	58	
I.	Shadow	Egress		20	19	3	
III.	Occult.	Disapp.	W.	21	12	45	
IV.	Occult.	Disapp.	W.	21	12	56	
II.	Transit	Ingress	W.	21	13	26	
II.	Shadow	Ingress	W.	21	13	37	

W.—Visible at Washington

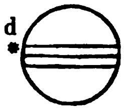
WASHINGTON MEAN TIME.

MARCH.

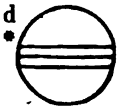
				d	h	m	s
I.	Occult.	Disapp.	W.	21	13	55	
IV.	Eclipse	Reapp.	W.	21	15	50	0.5
II.	Transit	Egress	W.	21	16	2	
III.	Eclipse	Reapp.	W.	21	16	12	43.5
I.	Eclipse	Reapp.	W.	21	16	15	56.8
II.	Shadow	Egress	W.	21	16	18	
I.	Transit	Ingress	W.	22	11	8	
I.	Shadow	Ingress	W.	22	11	16	
I.	Transit	Egress	W.	22	13	24	
I.	Shadow	Egress	W.	22	13	32	
II.	Occult.	Disapp.	W.	23	8	0	
I.	Occult.	Disapp.	W.	23	8	21	
I.	Eclipse	Reapp.	W.	23	10	44	22.3
II.	Eclipse	Reapp.	W.	23	10	55	39.5
I.	Transit	Ingress		24	5	34	
I.	Shadow	Ingress		24	5	45	
I.	Transit	Egress	W.	24	7	50	
I.	Shadow	Egress	W.	24	8	1	
III.	Transit	Ingress		25	2	13	
II.	Transit	Ingress		25	2	32	
I.	Occult.	Disapp.		25	2	47	
II.	Shadow	Ingress		25	2	54	
III.	Shadow	Ingress		25	2	56	
II.	Transit	Egress		25	5	8	
I.	Eclipse	Reapp.		25	5	12	49.8
III.	Transit	Egress		25	5	14	
II.	Shadow	Egress		25	5	35	
III.	Shadow	Egress		25	6	7	
I.	Transit	Ingress		26	0	0	
I.	Shadow	Ingress		26	0	13	
I.	Transit	Egress		26	2	16	
I.	Shadow	Egress		26	2	29	
II.	Occult.	Disapp.		26	21	8	
I.	Occult.	Disapp.		26	21	13	
I.	Eclipse	Reapp.		26	23	41	17.8
II.	Eclipse	Reapp.		27	0	14	32.0
I.	Transit	Ingress		27	18	26	
I.	Shadow	Ingress		27	18	42	
I.	Transit	Egress		27	20	42	
I.	Shadow	Egress		27	20	58	
II.	Transit	Ingress	W.	28	15	39	
I.	Occult.	Disapp.	W.	28	15	39	
III.	Occult.	Disapp.	W.	28	16	0	
II.	Shadow	Ingress	W.	28	16	11	
I.	Eclipse	Reapp.		28	18	9	45.0
II.	Transit	Egress		28	18	15	
II.	Shadow	Egress		28	18	52	
III.	Eclipse	Reapp.		28	20	9	56.7
I.	Transit	Ingress	W.	29	12	53	
I.	Shadow	Ingress	W.	29	13	11	
I.	Transit	Egress	W.	29	15	9	
I.	Shadow	Egress	W.	29	15	27	
IV.	Transit	Ingress		29	18	4	
IV.	Transit	Egress		29	19	46	
IV.	Shadow	Ingress		29	20	30	
IV.	Shadow	Egress		29	23	8	
I.	Occult.	Disapp.	W.	30	10	5	
II.	Occult.	Disapp.	W.	30	10	16	
I.	Eclipse	Reapp.	W.	30	12	38	12.4
II.	Eclipse	Reapp.	W.	30	13	32	18.9
I.	Transit	Ingress	W.	31	7	19	
I.	Shadow	Ingress	W.	31	7	39	
I.	Transit	Egress	W.	31	9	35	
I.	Shadow	Egress	W.	31	9	55	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

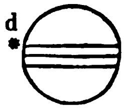
I.



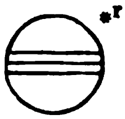
III.



II.



IV.



W.—Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s				d	h	m	s
I.	Occult.	Disapp.	1	4	31		III.	Transit	Ingress W.	8	8	49	
II.	Transit	Ingress	1	4	45		I.	Eclipse	Reapp. W.	8	9	0	41.2
II.	Shadow	Ingress	1	5	28		II.	Transit	Egress W.	8	9	37	
III.	Transit	Ingress	1	5	30		II.	Shadow	Egress W.	8	10	43	
III.	Shadow	Ingress W.	1	6	55		III.	Shadow	Ingress W.	8	10	54	
I.	Eclipse	Reapp. W.	1	7	6	41.7	III.	Transit	Egress W.	8	11	53	
II.	Transit	Egress W.	1	7	22		III.	Shadow	Egress W.	8	14	4	
II.	Shadow	Egress W.	1	8	9		I.	Transit	Ingress	9	3	30	
III.	Transit	Egress W.	1	8	32		I.	Shadow	Ingress	9	4	3	
III.	Shadow	Egress W.	1	10	6		I.	Transit	Egress	9	5	46	
I.	Transit	Ingress	2	1	45		I.	Shadow	Egress	9	6	19	
I.	Shadow	Ingress	2	2	8		I.	Occult.	Disapp.	10	0	42	
I.	Transit	Egress	2	4	1		II.	Occult.	Disapp.	10	1	42	
I.	Shadow	Egress	2	4	24		I.	Eclipse	Reapp.	10	3	29	13.3
I.	Occult.	Disapp.	2	22	57		II.	Eclipse	Reapp.	10	5	28	3.1
II.	Occult.	Disapp.	2	23	25		I.	Transit	Ingress	10	21	56	
I.	Eclipse	Reapp.	3	1	35	11.9	I.	Shadow	Ingress	10	22	31	
II.	Eclipse	Reapp.	3	2	51	14.6	I.	Transit	Egress	11	0	12	
I.	Transit	Ingress	3	20	11		I.	Shadow	Egress	11	0	47	
I.	Shadow	Ingress	3	20	37		I.	Occult.	Disapp.	11	19	8	
I.	Transit	Egress	3	22	27		II.	Transit	Ingress	11	20	7	
I.	Shadow	Egress	3	22	53		II.	Shadow	Ingress	11	21	19	
I.	Occult.	Disapp.	4	17	23		I.	Eclipse	Reapp.	11	21	57	43.9
II.	Transit	Ingress	4	17	52		III.	Occult.	Disapp.	11	22	37	
II.	Shadow	Ingress	4	18	45		II.	Transit	Egress	11	22	45	
III.	Occult.	Disapp.	4	19	18		II.	Shadow	Egress	12	0	0	
I.	Eclipse	Reapp.	4	20	3	40.8	III.	Eclipse	Reapp.	12	4	5	26.2
II.	Transit	Egress	4	20	29		I.	Transit	Ingress	12	16	22	
II.	Shadow	Egress	4	21	26		I.	Shadow	Ingress	12	17	0	
III.	Eclipse	Reapp.	5	0	7	38.8	I.	Transit	Egress	12	18	38	
I.	Transit	Ingress W.	5	14	37		I.	Shadow	Egress	12	19	16	
I.	Shadow	Ingress W.	5	15	5		I.	Occult.	Disapp. W.	13	13	34	
I.	Transit	Egress W.	5	16	53		II.	Occult.	Disapp. W.	13	14	51	
I.	Shadow	Egress	5	17	21		I.	Eclipse	Reapp.	13	16	26	15.4
I.	Occult.	Disapp. W.	6	11	50		II.	Eclipse	Reapp.	13	18	45	56.4
II.	Occult.	Disapp. W.	6	12	33		I	Transit	Ingress W.	14	10	49	
I.	Eclipse	Reapp. W.	6	14	32	10.5	I.	Shadow	Ingress W.	14	11	29	
II.	Eclipse	Reapp. W.	6	16	9	5.0	I.	Transit	Egress W.	14	13	5	
IV.	Occult.	Disapp.	7	2	56		I.	Shadow	Egress W.	14	13	45	
IV.	Occult.	Reapp.	7	4	50		I.	Occult.	Disapp. W.	15	8	0	
IV.	Eclipse	Disapp. W.	7	7	31	5.5	IV.	Transit	Ingress W.	15	8	27	
I.	Transit	Ingress W.	7	9	3		II.	Transit	Ingress W.	15	9	15	
I.	Shadow	Ingress W.	7	9	34		IV.	Transit	Egress W.	15	10	33	
IV.	Eclipse	Reapp. W.	7	9	41	10.9	II.	Shadow	Ingress W.	15	10	36	
I.	Transit	Egress W.	7	11	19		I.	Eclipse	Reapp. W.	15	10	54	46.8
I.	Shadow	Egress W.	7	11	50		II.	Transit	Egress W.	15	11	53	
I.	Occult.	Disapp.	8	6	16		III.	Transit	Ingress W.	15	12	10	
II.	Transit	Ingress W.	8	6	59		II.	Shadow	Egress W.	15	13	16	
II.	Shadow	Ingress W.	8	8	2		IV.	Shadow	Ingress W.	15	14	33	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s
III.	Shadow	Ingress W.	15	14	53	
III.	Transit	Egress W.	15	15	16	
IV.	Shadow	Egress	15	17	0	
III.	Shadow	Egress	15	18	2	
I.	Transit	Ingress	16	5	16	
I.	Shadow	Ingress	16	5	57	
I.	Transit	Egress W.	16	7	32	
I.	Shadow	Egress W.	16	8	13	
I.	Occult.	Disapp.	17	2	27	
II.	Occult.	Disapp.	17	4	1	
I.	Eclipse	Reapp.	17	5	23	21.9
II.	Eclipse	Reapp. W.	17	8	4	55.6
I.	Transit	Ingress	17	23	43	
I.	Shadow	Ingress	18	0	26	
I.	Transit	Egress	18	1	59	
I.	Shadow	Egress	18	2	42	
I.	Occult.	Disapp.	18	20	54	
II.	Transit	Ingress	18	22	24	
I.	Eclipse	Reapp.	18	23	51	54.2
II.	Shadow	Ingress	18	23	53	
II.	Transit	Egress	19	1	2	
III.	Occult.	Disapp.	19	2	1	
II.	Shadow	Egress	19	2	33	
III.	Eclipse	Reapp. W.	19	8	3	56.3
I.	Transit	Ingress	19	18	10	
I.	Shadow	Ingress	19	18	55	
I.	Transit	Egress	19	20	26	
I.	Shadow	Egress	19	21	11	
I.	Occult.	Disapp. W.	20	15	20	
II.	Occult.	Disapp.	20	17	11	
I.	Eclipse	Reapp.	20	18	20	27.4
II.	Eclipse	Reapp.	20	21	22	51.0
I.	Transit	Ingress W.	21	12	36	
I.	Shadow	Ingress W.	21	13	23	
I.	Transit	Egress W.	21	14	52	
I.	Shadow	Egress	21	15	39	
I.	Occult.	Disapp. W.	22	9	47	
II.	Transit	Ingress W.	22	11	33	
I.	Eclipse	Reapp. W.	22	12	49	1.3
II.	Shadow	Ingress W.	22	13	11	
II.	Transit	Egress W.	22	14	11	
III.	Transit	Ingress	22	15	35	
II.	Shadow	Egress	22	15	50	
III.	Transit	Egress	22	18	43	
III.	Shadow	Ingress	22	18	51	
III.	Shadow	Egress	22	21	59	
I.	Transit	Ingress	23	7	3	
I.	Shadow	Ingress W.	23	7	52	
I.	Transit	Egress W.	23	9	19	

			d	h	m	s
I.	Shadow	Egress W.	23	10	8	
IV.	Occult.	Disapp.	23	17	35	
IV.	Occult.	Reapp.	23	19	53	
IV.	Eclipse	Disapp.	24	1	35	51.3
IV.	Eclipse	Reapp.	24	3	32	1.5
I.	Occult.	Disapp.	24	4	14	
II.	Occult.	Disapp	24	6	22	
I.	Eclipse	Reapp.	24	7	17	37.3
II.	Eclipse	Reapp. W.	24	10	41	50.9
I.	Transit	Ingress	25	1	30	
I.	Shadow	Ingress	25	2	21	
I.	Transit	Egress	25	3	46	
I.	Shadow	Egress	25	4	37	
I.	Occult.	Disapp.	25	22	40	
II.	Transit	Ingress	26	0	42	
I.	Eclipse	Reapp.	26	1	46	10.9
II.	Shadow	Ingress	26	2	28	
II.	Transit	Egress	26	3	21	
II.	Shadow	Egress	26	5	7	
III.	Occult.	Disapp.	26	5	28	
III.	Occult.	Reapp. W.	26	8	37	
III.	Eclipse	Disapp. W.	26	9	6	17.1
III.	Eclipse	Reapp. W.	26	12	1	55.9
I.	Transit	Ingress	26	19	57	
I.	Shadow	Ingress	26	20	49	
I.	Transit	Egress	26	22	13	
I.	Shadow	Egress	26	23	5	
I.	Occult.	Disapp.	27	17	7	
II.	Occult.	Disapp.	27	19	33	
I.	Eclipse	Reapp.	27	20	14	45.8
II.	Eclipse	Reapp.	27	23	50	48.3
I.	Transit	Ingress W.	28	14	24	
I.	Shadow	Ingress	28	15	18	
I.	Transit	Egress	28	16	40	
I.	Shadow	Egress	28	17	34	
I.	Occult.	Disapp. W.	29	11	34	
II.	Transit	Ingress W.	29	13	52	
I.	Eclipse	Reapp. W.	29	14	43	20.9
II.	Shadow	Ingress	29	15	45	
II.	Transit	Egress	29	16	32	
II.	Shadow	Egress	29	18	25	
III.	Transit	Ingress	29	19	5	
III.	Transit	Egress	29	22	14	
III.	Shadow	Ingress	29	22	51	
III.	Shadow	Egress	30	1	58	
I.	Transit	Ingress W.	30	8	51	
I.	Shadow	Ingress W.	30	9	47	
I.	Transit	Egress W.	30	11	7	
I.	Shadow	Egress W.	30	12	3	

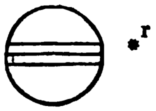
W.—Visible at Washington.

WASHINGTON MEAN TIME.

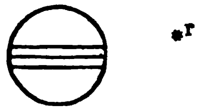
APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

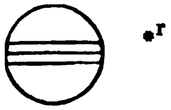
I.



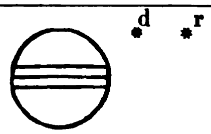
III.



II.



IV.



MAY.

			d	h	m	s
I.	Occult.	Disapp.	1	6	1	
II.	Occult.	Disapp. W.	1	8	45	
I.	Eclipse	Reapp. W.	1	9	11	58.5
II.	Eclipse	Reapp. W.	1	13	18	47.4
IV.	Transit	Ingress	1	23	30	
IV.	Transit	Egress	2	2	1	
I.	Transit	Ingress	2	3	18	
I.	Shadow	Ingress	2	4	15	
I.	Transit	Egress	2	5	35	
I.	Shadow	Egress	2	6	31	
IV.	Shadow	Ingress W.	2	8	38	
IV.	Shadow	Egress W.	2	10	52	
I.	Eclipse	Disapp.	3	0	28	
II.	Transit	Ingress	3	3	3	
I.	Eclipse	Reapp.	3	3	40	33.5
II.	Shadow	Ingress	3	5	2	
II.	Transit	Egress	3	5	43	
II.	Shadow	Egress W.	3	7	42	
III.	Occult.	Disapp. W.	3	9	0	
III.	Occult.	Reapp. W.	3	12	9	
III.	Eclipse	Disapp. W.	3	13	5	20.3
III.	Eclipse	Reapp.	3	16	0	2.1
I.	Transit	Ingress	3	21	45	
I.	Shadow	Ingress	3	22	44	
I.	Transit	Egress	4	0	2	
I.	Shadow	Egress	4	1	0	
I.	Occult.	Disapp.	4	18	55	
II.	Occult.	Disapp.	4	21	57	
I.	Eclipse	Reapp.	4	22	9	10.0
II.	Eclipse	Reapp.	5	2	36	45.8
I.	Transit	Ingress	5	16	12	
I.	Shadow	Ingress	5	17	13	
I.	Transit	Egress	5	18	29	
I.	Shadow	Egress	5	19	29	
I.	Occult.	Disapp. W.	6	13	22	
II.	Transit	Ingress	6	16	14	
I.	Eclipse	Reapp.	6	16	37	46.3
II.	Shadow	Ingress	6	18	20	
II.	Transit	Egress	6	18	54	
II.	Shadow	Egress	6	20	59	
III.	Transit	Ingress	6	22	39	
III.	Transit	Egress	7	1	49	
III.	Shadow	Ingress	7	2	50	
III.	Shadow	Egress	7	5	56	
I.	Transit	Ingress W.	7	10	40	
I.	Shadow	Ingress W.	7	11	43	
I.	Transit	Egress	7	12	57	
I.	Shadow	Egress	7	14	0	
I.	Occult.	Disapp. W.	8	7	49	
I.	Eclipse	Reapp. W.	8	11	6	25.5
II.	Occult.	Disapp. W.	8	11	10	
II.	Eclipse	Reapp.	8	15	55	43.3
I.	Transit	Ingress	9	5	7	
I.	Shadow	Ingress	9	6	11	
I.	Transit	Egress	9	7	24	
I.	Shadow	Egress W.	9	8	27	
I.	Occult.	Disapp.	10	2	17	
II.	Transit	Ingress	10	5	26	
I.	Eclipse	Reapp.	10	5	35	1.5
II.	Shadow	Ingress	10	7	37	
II.	Transit	Egress W.	10	8	6	
IV.	Occult.	Disapp. W.	10	9	4	
II.	Shadow	Egress W.	10	10	17	
IV.	Occult.	Reapp. W.	10	11	45	
III.	Occult.	Disapp. W.	10	12	34	
III.	Occult.	Reapp.	10	15	46	
III.	Eclipse	Disapp.	10	17	4	6.4
IV.	Eclipse	Disapp.	10	19	42	18.0
III.	Eclipse	Reapp.	10	19	57	50.8
IV.	Eclipse	Reapp.	10	21	22	30.6

W.—Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	10	23	35		IV.	Transit	Egress	18	18	19	
I.	Shadow	Ingress	11	0	40		I.	Occult.	Disapp.	18	22	34	
I.	Transit	Egress	11	1	52		I.	Eclipse	Reapp.	19	1	58	13.3
I.	Shadow	Egress	11	2	56		IV.	Shadow	Ingress	19	2	43	
I.	Occult.	Disapp.	11	20	44		II.	Occult.	Disapp.	19	2	51	
I.	Eclipse	Reapp.	12	0	3	39.5	IV.	Shadow	Egress	19	4	43	
II.	Occult.	Disapp.	12	0	23		II.	Eclipse	Reapp.	19	7	50	36.3
II.	Eclipse	Reapp.	12	5	13	42.5	I.	Transit	Ingress	19	19	53	
I.	Transit	Ingress	12	18	2		I.	Shadow	Ingress	19	21	4	
I.	Shadow	Ingress	12	19	8		I.	Transit	Egress	19	22	10	
I.	Transit	Egress	12	20	19		I.	Shadow	Egress	19	23	20	
I.	Shadow	Egress	12	21	24		I.	Occult.	Disapp.	20	17	2	
I.	Occult.	Disapp.	13	15	12		I.	Eclipse	Reapp.	20	20	26	51.6
I.	Eclipse	Reapp.	13	18	32	16.6	II.	Transit	Ingress	20	21	5	
II.	Transit	Ingress	13	18	39		II.	Shadow	Ingress	20	23	30	
II.	Shadow	Ingress	13	20	55		II.	Transit	Egress	20	23	46	
II.	Transit	Egress	13	21	19		II.	Shadow	Egress	21	2	8	
II.	Shadow	Egress	13	23	34		III.	Transit	Ingress	21	6	0	
III.	Transit	Ingress	14	2	17		III.	Transit	Egress W.	21	9	13	
III.	Transit	Egress	14	5	29		III.	Shadow	Ingress W.	21	10	49	
III.	Shadow	Ingress	14	6	50		III.	Shadow	Egress	21	13	54	
III.	Shadow	Egress W.	14	9	55		I.	Transit	Ingress	21	14	21	
I.	Transit	Ingress W.	14	12	29		I.	Shadow	Ingress	21	15	33	
I.	Shadow	Ingress W.	14	13	37		I.	Transit	Egress	21	16	39	
I.	Transit	Egress	14	14	46		I.	Shadow	Egress	21	17	49	
I.	Shadow	Egress	14	15	53		I.	Occult.	Disapp. W.	22	11	30	
I.	Occult.	Disapp. W.	15	9	39		I.	Eclipse	Reapp.	22	14	55	33.3
I.	Eclipse	Reapp. W.	15	12	0	57.1	II.	Occult.	Disapp.	22	16	7	
II.	Occult.	Disapp. W.	15	13	37		II.	Eclipse	Reapp.	22	21	9	27.5
II.	Eclipse	Reapp.	15	18	32	37.0	I.	Transit	Ingress W.	23	8	49	
I.	Transit	Ingress	16	6	57		I.	Shadow	Ingress W.	23	10	1	
I.	Shadow	Ingress W.	16	8	6		I.	Transit	Egress W.	23	11	7	
I.	Transit	Egress W.	16	9	14		I.	Shadow	Egress W.	23	12	17	
I.	Shadow	Egress W.	16	10	22		I.	Occult.	Disapp.	24	5	58	
I.	Occult.	Disapp.	17	4	7		I.	Eclipse	Reapp. W.	24	9	24	11.5
I.	Eclipse	Reapp.	17	7	29	34.3	II.	Transit	Ingress W.	24	10	20	
II.	Transit	Ingress	17	7	52		II.	Shadow	Ingress W.	24	12	47	
II.	Shadow	Ingress W.	17	10	12		II.	Transit	Egress W.	24	13	1	
II.	Transit	Egress W.	17	10	32		II.	Shadow	Egress	24	15	26	
II.	Shadow	Egress W.	17	12	51		III.	Occult.	Disapp.	24	19	59	
III.	Occult.	Disapp.	17	16	14		III.	Occult.	Reapp.	24	23	13	
III.	Occult.	Reapp.	17	19	27		III.	Eclipse	Disapp.	25	1	2	15.7
III.	Eclipse	Disapp.	17	21	2	57.2	I.	Transit	Ingress	25	3	17	
III.	Eclipse	Reapp.	17	23	55	43.8	III.	Eclipse	Reapp.	25	3	54	4.1
I.	Transit	Ingress	18	1	25		I.	Shadow	Ingress	25	4	30	
I.	Shadow	Ingress	18	2	35		I.	Transit	Egress	25	5	35	
I.	Transit	Egress	18	3	42		I.	Shadow	Egress	25	6	46	
I.	Shadow	Egress	18	4	51		I.	Occult.	Disapp.	26	0	26	
IV.	Transit	Ingress	18	15	29		I.	Eclipse	Reapp.	26	3	52	51.6

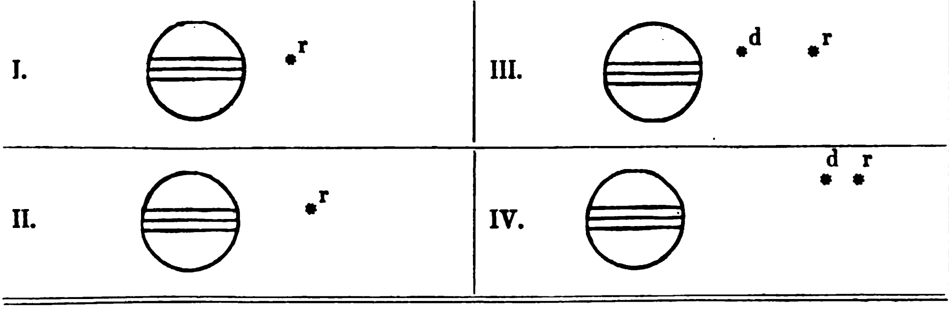
W.—Visible at Washington

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s				d	h	m	s
II.	Occult.	Disapp.	26	5	22		I.	Shadow	Ingress	28	17	27	
II.	Eclipse	Reapp. W.	26	10	27	26.1	III.	Shadow	Egress	28	17	53	
I.	Transit	Ingress	26	21	45		I.	Transit	Egress	28	18	31	
I.	Shadow	Ingress	26	22	59		I.	Shadow	Egress	28	19	43	
I.	Transit	Egress	27	0	3		I.	Occult.	Disapp.	29	13	22	
I.	Shadow	Egress	27	1	15		I.	Eclipse	Reapp.	29	16	50	13.1
IV.	Occult.	Disapp.	27	1	33		II.	Occult.	Disapp.	29	18	38	
IV.	Occult.	Reapp.	27	4	28		II.	Eclipse	Reapp.	29	23	46	13.0
IV.	Eclipse	Disapp.	27	13	50	24.9	I.	Transit	Ingress W.	30	10	41	
IV.	Eclipse	Reapp.	27	15	11	31.5	I.	Shadow	Ingress W.	30	11	56	
I.	Occult.	Disapp.	27	18	54		I.	Transit	Egress	30	12	59	
I.	Eclipse	Reapp.	27	22	21	30.4	I.	Shadow	Egress	30	14	12	
II.	Transit	Ingress	27	23	35		I.	Occult.	Disapp.	31	7	50	
II.	Shadow	Ingress	28	2	5		I.	Eclipse	Reapp. W.	31	11	18	52.0
II.	Transit	Egress	28	2	16		II.	Transit	Ingress	31	12	50	
II.	Shadow	Egress	28	4	43		II.	Shadow	Ingress	31	15	22	
III.	Transit	Ingress W.	28	9	47		II.	Transit	Egress	31	15	32	
III.	Transit	Egress	28	13	1		II.	Shadow	Egress	31	18	0	
III.	Shadow	Ingress	28	14	49		III.	Occult.	Disapp.	31	23	48	
I.	Transit	Ingress	28	16	13								

Phases of the Eclipses of the Satellites for an Inverting Telescope.



JUNE.

			d	h	m	s				d	h	m	s
III.	Occult.	Reapp.	1	3	3		I.	Shadow	Ingress	3	0	53	
III.	Eclipse	Disapp.	1	5	1	34.6	I.	Transit	Egress	3	1	56	
I.	Transit	Ingress	1	5	10		I.	Shadow	Egress	3	3	9	
I	Shadow	Ingress	1	6	25		I.	Occult.	Disapp.	3	20	47	
I.	Transit	Egress	1	7	28		I.	Eclipse	Reapp.	4	0	16	12.5
III.	Eclipse	Reapp.	1	7	52	24.2	II.	Transit	Ingress	4	2	6	
I.	Shadow	Egress W.	1	8	41		II.	Shadow	Ingress	4	4	40	
I.	Occult.	Disapp.	2	2	18		II.	Transit	Egress	4	4	48	
I.	Eclipse	Reapp.	2	5	47	33.1	II.	Shadow	Egress	4	7	18	
II.	Occult.	Disapp.	2	7	55		IV.	Transit	Ingress W.	4	8	27	
II.	Eclipse	Reapp.	2	13	4	10.5	IV.	Transit	Egress W.	4	11	27	
I.	Transit	Ingress	2	23	38		III.	Transit	Ingress	4	13	38	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

			d	h	m	s				d	h	m	s
III.	Transit	Egress	4	16	53		I.	Transit	Egress	11	22	19	
I.	Transit	Ingress	4	18	6		III.	Shadow	Ingress	11	22	48	
III.	Shadow	Ingress	4	18	48		I.	Shadow	Egress	11	23	34	
I.	Shadow	Ingress	4	19	22		III.	Shadow	Egress	12	1	49	
I.	Transit	Egress	4	20	24		I.	Occult.	Disapp.	12	17	10	
IV.	Shadow	Ingress	4	20	50		IV.	Occult.	Disapp.	12	19	0	
I.	Shadow	Egress	4	21	38		I.	Eclipse	Reapp.	12	20	39	41.7
III.	Shadow	Egress	4	21	51		IV.	Occult.	Reapp.	12	22	1	
IV.	Shadow	Egress	4	22	34		II.	Occult.	Disapp.	12	23	48	
I.	Occult.	Disapp.	5	15	15		II.	Eclipse	Reapp.	13	4	59	23.6
I.	Eclipse	Reapp.	5	18	44	56.2	IV.	Eclipse	Disapp.	13	8	1	57.2
II.	Occult.	Disapp.	5	21	12		IV.	Eclipse	Reapp. W.	13	8	57	6.4
II.	Eclipse	Reapp.	6	2	22	52.1	I	Transit	Ingress	13	14	29	
I.	Transit	Ingress	6	12	34		I.	Shadow	Ingress	13	15	46	
I.	Shadow	Ingress	6	13	51		I.	Transit	Egress	13	16	47	
I.	Transit	Egress	6	14	52		I.	Shadow	Egress	13	18	2	
I.	Shadow	Egress	6	16	6		I.	Occult.	Disapp. W.	14	11	38	
I.	Occult.	Disapp. W.	7	9	44		I.	Eclipse	Reapp.	14	15	8	21.6
I.	Eclipse	Reapp.	7	13	13	35.7	II.	Transit	Ingress	14	17	58	
II.	Transit	Ingress	7	15	23		II.	Shadow	Ingress	14	20	33	
II.	Shadow	Ingress	7	17	58		II.	Transit	Egress	14	20	40	
II.	Transit	Egress	7	18	5		II.	Shadow	Egress	14	23	12	
II.	Shadow	Egress	7	20	36		III.	Occult.	Disapp.	15	7	40	
III.	Occult.	Disapp.	8	3	42		I.	Transit	Ingress W.	15	8	58	
III.	Occult.	Reapp.	8	6	57		I.	Shadow	Ingress W.	15	10	15	
I.	Transit	Ingress	8	7	3		III.	Occult.	Reapp. W.	15	10	55	
I.	Shadow	Ingress W.	8	8	20		I.	Transit	Egress W.	15	11	16	
III.	Eclipse	Disapp. W.	8	9	1	30.9	I.	Shadow	Egress	15	12	31	
I.	Transit	Egress W.	8	9	21		III.	Eclipse	Disapp.	15	13	0	52.1
I.	Shadow	Egress W.	8	10	36		III.	Eclipse	Reapp.	15	15	49	42.9
III.	Eclipse	Reapp. W.	8	11	51	21.3	I.	Occult.	Disapp.	16	6	7	
I.	Occult.	Disapp.	9	4	12		I.	Eclipse	Reapp. W.	16	9	37	4.1
I.	Eclipse	Reapp.	9	7	42	17.6	II.	Occult.	Disapp.	16	13	6	
II.	Occult.	Disapp. W.	9	10	29		II.	Eclipse	Reapp.	16	18	17	17.2
II.	Eclipse	Reapp.	9	15	40	47.9	I.	Transit	Ingress	17	3	27	
I.	Transit	Ingress	10	1	32		I.	Shadow	Ingress	17	4	44	
I.	Shadow	Ingress	10	2	49		I.	Transit	Egress	17	5	45	
I.	Transit	Egress	10	3	50		I.	Shadow	Egress	17	7	0	
I.	Shadow	Egress	10	5	5		I.	Occult.	Disapp.	18	0	36	
I.	Occult.	Disapp.	10	22	41		I.	Eclipse	Reapp.	18	4	5	43.9
I.	Eclipse	Reapp.	11	2	10	57.2	II.	Transit	Ingress	18	7	16	
II.	Transit	Ingress	11	4	40		II.	Shadow	Ingress W.	18	9	51	
II.	Shadow	Ingress	11	7	16		II.	Transit	Egress W.	18	9	58	
II.	Transit	Egress	11	7	22		II.	Shadow	Egress	18	12	29	
II.	Shadow	Egress W.	11	9	54		III.	Transit	Ingress	18	21	33	
III.	Transit	Ingress	11	17	33		I.	Transit	Ingress	18	21	56	
I.	Transit	Ingress	11	20	1		I.	Shadow	Ingress	18	23	12	
III.	Transit	Egress	11	20	49		I.	Transit	Egress	19	0	14	
I.	Shadow	Ingress	11	21	18		III.	Transit	Egress	19	0	49	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

				d	h	m	s
I.	Shadow	Egress		19	1	28	
III.	Shadow	Ingress		19	2	47	
III.	Shadow	Egress		19	5	48	
I.	Occult.	Disapp.		19	19	5	
I.	Eclipse	Reapp.		19	22	34	28.7
II.	Occult.	Disapp.		20	2	25	
II.	Eclipse	Reapp.		20	7	35	46.8
I.	Transit	Ingress		20	16	25	
I.	Shadow	Ingress		20	17	41	
I.	Transit	Egress		20	18	43	
I.	Shadow	Egress		20	19	57	
IV.	Transit	Ingress		21	2	21	
IV.	Transit	Egress		21	5	24	
I.	Occult.	Disapp.		21	13	34	
IV.	Shadow	Ingress		21	14	59	
IV.	Shadow	Egress		21	16	23	
I.	Eclipse	Reapp.		21	17	3	9.1
II.	Transit	Ingress		21	20	35	
II.	Shadow	Ingress		21	23	9	
II.	Transit	Egress		21	23	17	
II.	Shadow	Egress		22	1	47	
I.	Transit	Ingress	W.	22	10	54	
III.	Occult.	Disapp.		22	11	41	
I.	Shadow	Ingress		22	12	10	
I.	Transit	Egress		22	13	12	
I.	Shadow	Egress		22	14	26	
III.	Occult.	Reapp.		22	14	57	
III.	Eclipse	Disapp.		22	17	0	14.2
III.	Eclipse	Reapp.		22	19	48	5.0
I.	Occult.	Disapp.		23	8	3	
I.	Eclipse	Reapp.		23	11	31	52.0
II.	Occult.	Disapp.		23	15	44	
II.	Eclipse	Reapp.		23	20	53	37.9
I.	Transit	Ingress		24	5	23	
I.	Shadow	Ingress		24	6	38	
I.	Transit	Egress		24	7	41	
I.	Shadow	Egress	W.	24	8	54	
I.	Occult.	Disapp.		25	2	32	
I.	Eclipse	Reapp.		25	6	0	31.9
II.	Transit	Ingress	W.	25	9	54	
II.	Shadow	Ingress		25	12	27	
II.	Transit	Egress		25	12	36	
II.	Shadow	Egress		25	15	4	
I.	Transit	Ingress		25	23	52	
I.	Shadow	Ingress		26	1	7	
III.	Transit	Ingress		26	1	37	
I.	Transit	Egress		26	2	10	
I.	Shadow	Egress		26	3	23	
III.	Transit	Egress		26	4	52	
III.	Shadow	Ingress		26	6	47	
III.	Shadow	Egress	W.	26	9	47	
I.	Occult.	Disapp.		26	21	1	
I.	Eclipse	Reapp.		27	0	29	17.1
II.	Occult.	Disapp		27	5	4	
II.	Eclipse	Reapp.	W.	27	10	12	0.5
I.	Transit	Ingress		27	18	21	
I.	Shadow	Ingress		27	19	36	
I.	Transit	Egress		27	20	39	
I.	Shadow	Egress		27	21	52	
I.	Occult.	Disapp.		28	15	30	
I.	Eclipse	Reapp.		28	18	57	57.6
II.	Transit	Ingress		28	23	14	
II.	Shadow	Ingress		29	1	45	
II.	Transit	Egress		29	1	56	
II.	Shadow	Egress		29	4	22	
I.	Transit	Ingress		29	12	50	
IV.	Occult.	Disapp.		29	13	19	
I.	Shadow	Ingress		29	14	5	
I.	Transit	Egress		29	15	8	
III.	Occult.	Disapp.		29	15	46	
I.	Shadow	Egress		29	16	21	
IV.	Occult.	Reapp.		29	16	23	
III.	Occult.	Reapp.		29	19	2	
III.	Eclipse	Disapp.		29	20	59	15.9
III.	Eclipse	Reapp.		29	23	46	6.3
I.	Occult.	Disapp.	W.	30	9	59	
I.	Eclipse	Reapp.		30	13	26	40.9
II.	Occult.	Disapp.		30	18	24	
II.	Eclipse	Reapp.		30	23	29	48.7

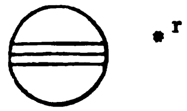
W.—Visible at Washington.

WASHINGTON MEAN TIME.

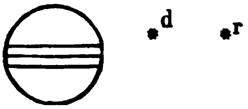
JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

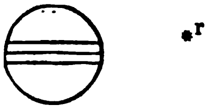
I.



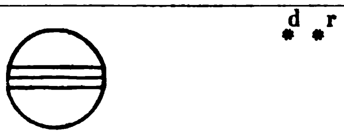
III.



II.



IV.



JULY.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	1	7	19		III.	Occult.	Disapp.	6	19	54	
I.	Shadow	Ingress W.	1	8	34		III.	Occult.	Reapp.	6	23	10	
I.	Transit	Egress W.	1	9	39		III.	Eclipse	Disapp.	7	0	58	18.8
I.	Shadow	Egress	1	10	50		III.	Eclipse	Reapp.	7	3	44	8.6
I.	Occult.	Disapp.	2	4	28		I.	Occult.	Disapp.	7	11	55	
I.	Eclipse	Reapp.	2	7	55	20.8	I.	Eclipse	Reapp.	7	15	21	30.1
II.	Transit	Ingress	2	12	34		II.	Occult.	Disapp.	7	21	6	
II.	Shadow	Ingress	2	15	3		II.	Eclipse	Reapp.	8	2	5	48.8
II.	Transit	Egress	2	15	16		I.	Transit	Ingress W.	8	9	16	
II.	Shadow	Egress	2	17	40		I.	Shadow	Ingress	8	10	29	
I.	Transit	Ingress	3	1	49		I.	Transit	Egress	8	11	34	
I.	Shadow	Ingress	3	3	3		I.	Shadow	Egress	8	12	45	
I.	Transit	Egress	3	4	7		I.	Occult.	Disapp.	9	6	24	
I.	Shadow	Egress	3	5	19		I.	Eclipse	Reapp. W.	9	9	50	9.9
III.	Transit	Ingress	3	5	44		II.	Transit	Ingress	9	15	15	
III.	Transit	Egress W.	3	9	0		II.	Shadow	Ingress	9	17	39	
III.	Shadow	Ingress	3	10	47		II.	Transit	Egress	9	17	57	
III.	Shadow	Egress	3	13	46		II.	Shadow	Egress	9	20	16	
I.	Occult.	Disapp.	3	22	57		I.	Transit	Ingress	10	3	45	
I.	Eclipse	Reapp.	4	2	24	6.1	I.	Shadow	Ingress	10	4	57	
II.	Occult.	Disapp.	4	7	45		I.	Transit	Egress	10	6	3	
II.	Eclipse	Reapp.	4	12	48	3.9	I.	Shadow	Egress	10	7	13	
I.	Transit	Ingress	4	20	18		III.	Transit	Ingress W.	10	9	54	
I.	Shadow	Ingress	4	21	31		III.	Transit	Egress	10	13	9	
I.	Transit	Egress	4	22	36		III.	Shadow	Ingress	10	14	46	
I.	Shadow	Egress	4	23	47		III.	Shadow	Egress	10	17	44	
I.	Occult.	Disapp.	5	17	26		I.	Occult.	Disapp.	11	0	54	
I.	Eclipse	Reapp.	5	20	52	46.7	I.	Eclipse	Reapp.	11	4	18	55.2
II.	Transit	Ingress	6	1	54		II.	Occult.	Disapp.	11	10	27	
II.	Shadow	Ingress	6	4	21		II.	Eclipse	Reapp.	11	15	23	56.4
II.	Transit	Egress	6	4	36		I.	Transit	Ingress	11	22	15	
II.	Shadow	Egress	6	6	58		I.	Shadow	Ingress	11	23	26	
I.	Transit	Ingress	6	14	47		I.	Transit	Egress	12	0	33	
I.	Shadow	Ingress	6	16	0		I.	Shadow	Egress	12	1	42	
I.	Transit	Egress	6	17	5		I.	Occult.	Disapp.	12	19	24	
I.	Shadow	Egress	6	18	16		I.	Eclipse	Reapp.	12	22	47	35.8

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JULY.

			d	h	m	s				d	h	m	s
II.	Transit	Ingress	13	4	36		I.	Shadow	Ingress	20	19	49	
II.	Shadow	Ingress	13	6	57		I.	Transit	Egress	20	21	1	
II.	Transit	Egress	13	7	18		I.	Shadow	Egress	20	22	5	
II.	Shadow	Egress W.	13	9	34		III.	Occult.	Disapp.	21	4	20	
I.	Transit	Ingress	13	16	45		III.	Occult.	Reapp.	21	7	34	
I.	Shadow	Ingress	13	17	55		III.	Eclipse	Disapp. W.	21	8	57	7.7
I.	Transit	Egress	13	19	3		III.	Eclipse	Reapp.	21	11	40	55.3
I.	Shadow	Egress	13	20	11		I.	Occult.	Disapp.	21	15	52	
III.	Occult.	Disapp.	14	0	6		I.	Eclipse	Reapp.	21	19	11	8.5
III.	Occult.	Reapp.	14	3	21		II.	Occult.	Disapp.	22	2	32	
III.	Eclipse	Disapp.	14	4	57	46.0	II.	Eclipse	Reapp.	22	7	17	15.0
III.	Eclipse	Reapp.	14	7	42	34.8	I.	Transit	Ingress	22	13	13	
I.	Occult.	Disapp.	14	13	53		I.	Shadow	Ingress	22	14	18	
I.	Eclipse	Reapp.	14	17	16	19.4	I.	Transit	Egress	22	15	31	
II.	Occult.	Disapp.	14	23	49		I.	Shadow	Egress	22	16	34	
II.	Eclipse	Reapp.	15	4	41	37.7	I.	Occult.	Disapp.	23	10	22	
I.	Transit	Ingress	15	11	14		I.	Eclipse	Reapp.	23	13	39	47.8
I.	Shadow	Ingress	15	12	23		II.	Transit	Ingress	23	20	42	
I.	Transit	Egress	15	13	32		II.	Shadow	Ingress	23	22	51	
I.	Shadow	Egress	15	14	39		II.	Transit	Egress	23	23	24	
I.	Occult.	Disapp. W.	16	8	23		II.	Shadow	Egress	24	1	28	
I.	Eclipse	Reapp.	16	11	44	58.9	I.	Transit	Ingress	24	7	43	
II.	Transit	Ingress	16	17	58		I.	Shadow	Ingress W.	24	8	47	
II.	Shadow	Ingress	16	20	15		I.	Transit	Egress	24	10	0	
II.	Transit	Egress	16	20	40		I.	Shadow	Egress	24	11	3	
II.	Shadow	Egress	16	22	52		III.	Transit	Ingress	24	18	22	
I.	Transit	Ingress	17	5	43		III.	Transit	Egress	24	21	36	
I.	Shadow	Ingress	17	6	52		III.	Shadow	Ingress	24	22	44	
I.	Transit	Egress W.	17	8	1		III.	Shadow	Egress	25	1	40	
I.	Shadow	Egress W.	17	9	8		I.	Occult.	Disapp.	25	4	52	
III.	Transit	Ingress	17	14	7		I.	Eclipse	Reapp. W.	25	8	8	33.4
III.	Transit	Egress	17	17	22		II.	Occult.	Disapp.	25	15	54	
III.	Shadow	Ingress	17	18	45		II.	Eclipse	Reapp.	25	20	35	6.9
III.	Shadow	Egress	17	21	42		I.	Transit	Ingress	26	2	12	
I.	Occult.	Disapp.	18	2	53		I.	Shadow	Ingress	26	3	15	
I.	Eclipse	Reapp.	18	6	13	44.5	I.	Transit	Egress	26	4	29	
II.	Occult.	Disapp.	18	13	10		I.	Shadow	Egress	26	5	31	
II.	Eclipse	Reapp.	18	17	59	37.6	I.	Occult.	Disapp.	26	23	21	
I.	Transit	Ingress	19	0	13		I.	Eclipse	Reapp.	27	2	37	13.4
I.	Shadow	Ingress	19	1	21		II.	Transit	Ingress	27	10	4	
I.	Transit	Egress	19	2	31		II.	Shadow	Ingress	27	12	9	
I.	Shadow	Egress	19	3	37		II.	Transit	Egress	27	12	46	
I.	Occult.	Disapp.	19	21	22		II.	Shadow	Egress	27	14	46	
I.	Eclipse	Reapp.	20	0	42	24.8	I.	Transit	Ingress	27	20	42	
II.	Transit	Ingress	20	7	20		I.	Shadow	Ingress	27	21	44	
II.	Shadow	Ingress	20	9	33		I.	Transit	Egress	27	22	59	
II.	Transit	Egress	20	10	2		I.	Shadow	Egress	28	0	0	
II.	Shadow	Egress	20	12	10		III.	Occult.	Disapp. W.	28	8	38	
I.	Transit	Ingress	20	18	43		III.	Occult.	Reapp.	28	11	51	

W.—Visible at Washington

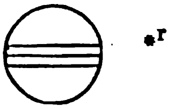
WASHINGTON MEAN TIME.

JULY.

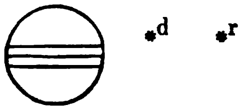
			d	h	m	s				d	h	m	s
III.	Eclipse	Disapp.	28	12	57	2.7	I.	Eclipse	Reapp.	30	15	34	35.5
III.	Eclipse	Reapp.	28	15	39	48.7	II.	Transit	Ingress	30	23	27	
I.	Occult.	Disapp.	28	17	51		II.	Shadow	Ingress	31	1	27	
I.	Eclipse	Reapp.	28	21	5	56.9	II.	Transit	Egress	31	2	9	
II.	Occult.	Disapp.	29	5	17		II.	Shadow	Egress	31	4	4	
II.	Eclipse	Reapp.	29	9	52	40.2	I.	Transit	Ingress	31	9	42	
I.	Transit	Ingress	29	15	12		I.	Shadow	Ingress	31	10	41	
I.	Shadow	Ingress	29	16	13		I.	Transit	Egress	31	11	59	
I.	Transit	Egress	29	17	29		I.	Shadow	Egress	31	12	57	
I.	Shadow	Egress	29	18	29		III.	Transit	Ingress	31	22	40	
I.	Occult.	Disapp.	30	12	21								

Phases of the Eclipses of the Satellites for an Inverting Telescope.

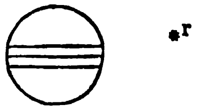
I.



III.



II.



IV. Not Eclipsed.

AUGUST.

			d	h	m	s				d	h	m	s
III.	Transit	Egress	1	1	53		I.	Occult.	Disapp.	4	19	51	
III.	Shadow	Ingress	1	2	43		I.	Eclipse	Reapp.	4	23	0	43.0
III.	Shadow	Egress	1	5	38		II.	Occult.	Disapp. W.	5	8	2	
I.	Occult.	Disapp.	1	6	51		II.	Eclipse	Reapp.	5	12	27	53.0
I.	Eclipse	Reapp.	1	10	3	20.4	I.	Transit	Ingress	5	17	12	
II.	Occult.	Disapp.	1	18	40		I.	Shadow	Ingress	5	18	7	
II.	Eclipse	Reapp.	1	23	10	24.2	I.	Transit	Egress	5	19	29	
I.	Transit	Ingress	2	4	12		I.	Shadow	Egress	5	20	23	
I.	Shadow	Ingress	2	5	10		I.	Occult.	Disapp.	6	14	21	
I.	Transit	Egress	2	6	29		I.	Eclipse	Reapp.	6	17	29	21.0
I.	Shadow	Egress	2	7	26		II.	Transit	Ingress	7	2	14	
I.	Occult.	Disapp.	3	1	21		II.	Shadow	Ingress	7	4	4	
I.	Eclipse	Reapp.	3	4	31	59.7	II.	Transit	Egress	7	4	56	
II.	Transit	Ingress	3	12	50		II.	Shadow	Egress	7	6	40	
II.	Shadow	Ingress	3	14	45		I.	Transit	Ingress	7	11	42	
II.	Transit	Egress	3	15	32		I.	Shadow	Ingress	7	12	36	
II.	Shadow	Egress	3	17	22		I.	Transit	Egress	7	13	59	
I.	Transit	Ingress	3	22	42		I.	Shadow	Egress	7	14	52	
I.	Shadow	Ingress	3	23	39		III.	Transit	Ingress	8	3	0	
I.	Transit	Egress	4	0	59		III.	Transit	Egress	8	6	12	
I.	Shadow	Egress	4	1	55		III.	Shadow	Ingress	8	6	42	
III.	Occult.	Disapp.	4	12	57		I.	Occult.	Disapp.	8	8	51	
III.	Occult.	Reapp.	4	16	9		III.	Shadow	Egress	8	9	36	
III.	Eclipse	Disapp.	4	16	56	18.5	I.	Eclipse	Reapp.	8	11	58	5.8
III.	Eclipse	Reapp.	4	19	38	2.5							

W.—Visible at Washington.

WASHINGTON MEAN TIME.

AUGUST.

			d	h	m	s				d	h	m	s
II.	Occult.	Disapp.	8	21	25		I.	Shadow	Egress	16	11	15	
II.	Eclipse	Reapp.	9	1	45	29.0	I.	Occult.	Disapp.	17	5	22	
I.	Transit	Ingress	9	6	13		I.	Eclipse	Reapp.	17	8	21	27.1
I.	Shadow	Ingress	9	7	5		II.	Transit	Ingress	17	18	26	
I.	Transit	Egress	9	8	30		II.	Shadow	Ingress	17	19	58	
I.	Shadow	Egress	9	9	21		II.	Transit	Egress	17	21	7	
I.	Occult.	Disapp.	10	3	22		II.	Shadow	Egress	17	22	34	
I.	Eclipse	Reapp.	10	6	26	44.6	I.	Transit	Ingress	18	2	43	
II.	Transit	Ingress	10	15	38		I.	Shadow	Ingress	18	3	28	
II.	Shadow	Ingress	10	17	22		I.	Transit	Egress	18	5	0	
II.	Transit	Egress	10	18	19		I.	Shadow	Egress	18	5	44	
II.	Shadow	Egress	10	19	58		III.	Occult.	Disapp.	18	21	40	
I.	Transit	Ingress	11	0	43		I.	Occult.	Disapp.	18	23	53	
I.	Shadow	Ingress	11	1	33		III.	Occult.	Reapp.	19	0	50	
I.	Transit	Egress	11	3	0		III.	Eclipse	Disapp.	19	0	54	21.2
I.	Shadow	Egress	11	3	49		I.	Eclipse	Reapp.	19	2	50	9.7
III.	Occult.	Disapp.	11	17	18		III.	Eclipse	Reapp.	19	3	34	0.0
III.	Occult.	Reapp.	11	20	29		II.	Occult.	Disapp.	19	13	35	
III.	Eclipse	Disapp.	11	20	55	30.8	II.	Eclipse	Reapp.	19	17	37	41.9
I.	Occult.	Disapp.	11	21	52		I.	Transit	Ingress	19	21	13	
III.	Eclipse	Reapp.	11	23	36	12.4	I.	Shadow	Ingress	19	21	56	
I.	Eclipse	Reapp.	12	0	55	27.6	I.	Transit	Egress	19	23	30	
II.	Occult.	Disapp.	12	10	48		I.	Shadow	Egress	20	0	12	
II.	Eclipse	Reapp.	12	15	2	53.3	I.	Occult.	Disapp.	20	18	23	
I.	Transit	Ingress	12	19	13		I.	Eclipse	Reapp.	20	21	18	46.0
I.	Shadow	Ingress	12	20	2		II.	Transit	Ingress	21	7	50	
I.	Transit	Egress	12	21	30		II.	Shadow	Ingress	21	9	17	
I.	Shadow	Egress	12	22	18		II.	Transit	Egress	21	10	31	
I.	Occult.	Disapp.	13	16	22		II.	Shadow	Egress	21	11	52	
I.	Eclipse	Reapp.	13	19	24	4.8	I.	Transit	Ingress	21	15	44	
II.	Transit	Ingress	14	5	2		I.	Shadow	Ingress	21	16	25	
II.	Shadow	Ingress	14	6	40		I.	Transit	Egress	21	18	0	
II.	Transit	Egress W.	14	7	43		I.	Shadow	Egress	21	18	41	
II.	Shadow	Egress	14	9	16		III.	Transit	Ingress	22	11	45	
I.	Transit	Ingress	14	13	43		I.	Occult.	Disapp.	22	12	53	
I.	Shadow	Ingress	14	14	31		III.	Shadow	Ingress	22	14	40	
I.	Transit	Egress	14	16	0		III.	Transit	Egress	22	14	55	
I.	Shadow	Egress	14	16	47		I.	Eclipse	Reapp.	22	15	47	29.8
III.	Transit	Ingress W.	15	7	22		III.	Shadow	Egress	22	17	32	
III.	Transit	Egress	15	10	32		II.	Occult.	Disapp.	23	2	59	
III.	Shadow	Ingress	15	10	41		II.	Eclipse	Reapp.	23	6	55	2.7
I.	Occult.	Disapp.	15	10	52		I.	Transit	Ingress	23	10	14	
III.	Shadow	Egress	15	13	34		I.	Shadow	Ingress	23	10	53	
I.	Eclipse	Reapp.	15	13	52	48.9	I.	Transit	Egress	23	12	30	
II.	Occult.	Disapp.	16	0	12		I.	Shadow	Egress	23	13	9	
II.	Eclipse	Reapp.	16	4	20	21.8	I.	Occult.	Disapp.	24	7	23	
I.	Transit	Ingress	16	8	13		I.	Eclipse	Reapp.	24	10	16	7.3
I.	Shadow	Ingress	16	8	59		II.	Transit	Ingress	24	21	14	
I.	Transit	Egress	16	10	30		II.	Shadow	Ingress	24	22	35	

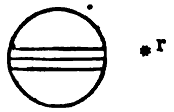
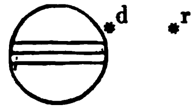
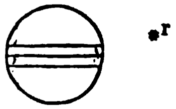
W.—Visible at Washington.

WASHINGTON MEAN TIME.

AUGUST.

			d	h	m	s				d	h	m	s
II.	Transit	Egress	24	23	55		II.	Transit	Egress	28	13	20	
II.	Shadow	Egress	25	1	10		II.	Shadow	Egress	28	14	28	
I.	Transit	Ingress	25	4	44		I.	Transit	Ingress	28	17	44	
I.	Shadow	Ingress	25	5	22		I.	Shadow	Ingress	28	18	19	
I.	Transit	Egress	25	7	0		I.	Transit	Egress	28	20	0	
I.	Shadow	Egress	25	7	38		I.	Shadow	Egress	28	20	35	
I.	Occult.	Disapp.	26	1	53		I.	Occult.	Disapp.	29	14	54	
III.	Occult.	Disapp.	26	2	4		III.	Transit	Ingress	29	16	10	
I.	Eclipse	Reapp.	26	4	44	49.2	I.	Eclipse	Reapp.	29	17	42	7.9
III.	Eclipse	Reapp.	26	7	31	46.1	III.	Shadow	Ingress	29	18	39	
II.	Occult.	Disapp.	26	16	22		III.	Transit	Egress	29	19	18	
II.	Eclipse	Reapp.	26	20	12	17.3	III.	Shadow	Egress	29	21	30	
I.	Transit	Ingress	26	23	14		II.	Occult.	Disapp.	30	5	46	
I.	Shadow	Ingress	26	23	50		II.	Eclipse	Reapp.	30	9	29	31.8
I.	Transit	Egress	27	1	30		I.	Transit	Ingress	30	12	14	
I.	Shadow	Egress	27	2	6		I.	Shadow	Ingress	30	12	48	
I.	Occult.	Disapp.	27	20	23		I.	Transit	Egress	30	14	30	
I.	Eclipse	Reapp.	27	23	13	24.9	I.	Shadow	Egress	30	15	4	
II.	Transit	Ingress	28	10	39		I.	Occult.	Disapp.	31	9	24	
II.	Shadow	Ingress	28	11	53		I.	Eclipse	Reapp.	31	12	10	44.7

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		III.	
II.		IV.	Not Eclipsed.

SEPTEMBER.

			d	h	m	s				d	h	m	s
II.	Transit	Ingress	1	0	4		I.	Transit	Ingress	3	1	14	
II.	Shadow	Ingress	1	1	11		I.	Shadow	Ingress	3	1	45	
II.	Transit	Egress	1	2	44		I.	Transit	Egress	3	3	30	
II.	Shadow	Egress	1	3	37		I.	Shadow	Egress	3	4	1	
I.	Transit	Ingress	1	6	44		I.	Occult.	Disapp.	3	22	24	
I.	Shadow	Ingress	1	7	16		I.	Eclipse	Reapp.	4	1	8	0.8
I.	Transit	Egress	1	9	0		II.	Transit	Ingress	4	13	29	
I.	Shadow	Egress	1	9	32		II.	Shadow	Ingress	4	14	30	
I.	Occult.	Disapp.	2	3	54		II.	Transit	Egress	4	16	9	
III.	Occult.	Disapp.	2	6	30		II.	Shadow	Egress	4	17	5	
I.	Eclipse	Reapp.	2	6	39	26.0	I.	Transit	Ingress	4	19	44	
III.	Eclipse	Reapp.	2	11	29	54.7	I.	Shadow	Ingress	4	20	14	
II.	Occult.	Disapp.	2	19	10		I.	Transit	Egress	4	22	0	
II.	Eclipse	Reapp.	2	22	46	41.4	I.	Shadow	Egress	4	22	30	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

The Satellites are not visible from September 4th to November 5th, Jupiter being too near the Sun.

NOVEMBER.

			d	h	m	s				d	h	m	s
I.	Shadow	Ingress	5	18	49		I.	Transit	Egress	12	23	35	
II.	Eclipse	Disapp.	5	19	20	52.0	III.	Eclipse	Disapp.	13	0	40	0.0
I.	Transit	Ingress	5	19	21		II.	Occult.	Reapp.	13	1	40	
III.	Eclipse	Disapp.	5	20	41	41.8	III.	Occult.	Reapp.	13	5	47	
I.	Shadow	Egress	5	21	3		I.	Eclipse	Disapp. W.	13	18	0	7.5
I.	Transit	Egress	5	21	36		I.	Occult.	Reapp.	13	20	51	
II.	Occult.	Reapp.	5	22	54		I.	Shadow	Ingress	14	15	12	
III.	Occult.	Reapp.	6	1	24		I.	Transit	Ingress	14	15	51	
I.	Eclipse	Disapp.	6	16	6	12.1	II.	Shadow	Ingress W.	14	16	34	
I.	Occult.	Reapp.	6	18	51		I.	Shadow	Egress W.	14	17	26	
I.	Shadow	Ingress	7	13	18		II.	Transit	Ingress W.	14	17	52	
I.	Transit	Ingress	7	13	51		I.	Transit	Egress W.	14	18	4	
II.	Shadow	Ingress	7	13	58		II.	Shadow	Egress	14	19	8	
II.	Transit	Ingress	7	15	3		II.	Transit	Egress	14	20	26	
I.	Shadow	Egress	7	15	32		I.	Eclipse	Disapp.	15	12	28	38.7
I.	Transit	Egress	7	16	6		I.	Occult.	Reapp.	15	15	21	
II.	Shadow	Egress	7	16	32		I.	Shadow	Ingress	16	9	40	
II.	Transit	Egress W.	7	17	38		I.	Transit	Ingress	16	10	20	
I.	Eclipse	Disapp.	8	10	34	44.6	II.	Eclipse	Disapp.	16	11	10	33.2
I.	Occult.	Reapp.	8	13	21		I.	Shadow	Egress	16	11	54	
I.	Shadow	Ingress	9	7	47		I.	Transit	Egress	16	12	34	
I.	Transit	Ingress	9	8	21		III.	Shadow	Ingress	16	14	20	
II.	Eclipse	Disapp.	9	8	37	26.8	II.	Occult.	Reapp.	16	15	2	
I.	Shadow	Egress	9	10	1		III.	Shadow	Egress W.	16	17	0	
III.	Shadow	Ingress	9	10	22		III.	Transit	Ingress W.	16	17	6	
I.	Transit	Egress	9	10	36		III.	Transit	Egress	16	19	46	
II.	Occult.	Reapp.	9	12	17		I.	Eclipse	Disapp.	17	6	57	4.1
III.	Transit	Ingress	9	12	41		I.	Occult.	Reapp.	17	9	51	
III.	Shadow	Egress	9	13	3		I.	Shadow	Ingress	18	4	8	
III.	Transit	Egress	9	15	24		I.	Transit	Ingress	18	4	50	
I.	Eclipse	Disapp.	10	5	3	11.2	II.	Shadow	Ingress	18	5	53	
I.	Occult.	Reapp.	10	7	51		I.	Shadow	Egress	18	6	22	
I.	Shadow	Ingress	11	2	15		I.	Transit	Egress	18	7	4	
I.	Transit	Ingress	11	2	51		II.	Transit	Ingress	18	7	16	
II.	Shadow	Ingress	11	3	16		II.	Shadow	Egress	18	8	26	
II.	Transit	Ingress	11	4	27		II.	Transit	Egress	18	9	50	
I.	Shadow	Egress	11	4	29		I.	Eclipse	Disapp.	19	1	25	35.0
I.	Transit	Egress	11	5	6		I.	Occult.	Reapp.	19	4	21	
II.	Shadow	Egress	11	5	50		I.	Shadow	Ingress	19	22	37	
II.	Transit	Egress	11	7	2		I.	Transit	Ingress	19	23	20	
I.	Eclipse	Disapp.	11	23	31	43.5	II.	Eclipse	Disapp.	20	0	27	4.9
I.	Occult.	Reapp.	12	2	21		I.	Shadow	Egress	20	0	51	
I.	Shadow	Ingress	12	20	44		I.	Transit	Egress	20	1	34	
I.	Transit	Ingress	12	21	21		II.	Occult.	Reapp.	20	4	25	
II.	Eclipse	Disapp.	12	21	54	0.0	III.	Eclipse	Disapp.	20	4	38	9.9
I.	Shadow	Egress	12	22	58		III.	Eclipse	Reapp.	20	7	3	54.3

W.—Visible at Washington

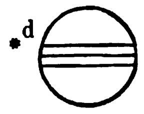
WASHINGTON MEAN TIME.

NOVEMBER.

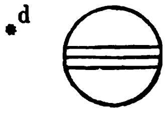
			d	h	m	s
III.	Occult.	Disapp.	20	7	31	
III.	Occult.	Reapp.	20	10	8	
I.	Eclipse	Disapp.	20	19	53	57.7
I.	Occult.	Reapp.	20	22	51	
I.	Shadow	Ingress W.	21	17	5	
I.	Transit	Ingress W.	21	17	49	
II.	Shadow	Ingress	21	19	11	
I.	Shadow	Egress	21	19	19	
I.	Transit	Egress	21	20	3	
II.	Transit	Ingress	21	20	40	
II.	Shadow	Egress	21	21	44	
II.	Transit	Egress	21	23	14	
I.	Eclipse	Disapp.	22	14	22	27.5
I.	Occult.	Reapp. W.	22	17	20	
I.	Shadow	Ingress	23	11	33	
I.	Transit	Ingress	23	12	19	
II.	Eclipse	Disapp.	23	13	43	36.2
I.	Shadow	Egress	23	13	47	
I.	Transit	Egress	23	14	33	
II.	Occult.	Reapp. W.	23	17	47	
III.	Shadow	Ingress W.	23	18	18	
III.	Shadow	Egress	23	20	57	
III.	Transit	Ingress	23	21	29	
III.	Transit	Egress	24	0	6	
I.	Eclipse	Disapp.	24	8	50	51.7
I.	Occult.	Reapp.	24	11	50	
I.	Shadow	Ingress	25	6	1	
I.	Transit	Ingress	25	6	49	
I.	Shadow	Egress	25	8	15	
II.	Shadow	Ingress	25	8	29	
I.	Transit	Egress	25	9	3	
II.	Transit	Ingress	25	10	3	
II.	Shadow	Egress	25	11	2	
II.	Transit	Egress	25	12	37	
I.	Eclipse	Disapp.	26	3	19	21.4
I.	Occult.	Reapp.	26	6	20	
I.	Shadow	Ingress	27	0	29	
I.	Transit	Ingress	27	1	18	
I.	Shadow	Egress	27	2	43	
II.	Eclipse	Disapp.	27	3	0	6.0
I.	Transit	Egress	27	3	32	
II.	Occult.	Reapp.	27	7	9	
III.	Eclipse	Disapp.	27	8	35	58.7
III.	Eclipse	Reapp.	27	11	0	38.3
III.	Occult.	Disapp.	27	11	53	
III.	Occult.	Reapp.	27	14	27	
I.	Eclipse	Disapp.	27	21	47	43.0
I.	Occult.	Reapp.	28	0	50	
I.	Shadow	Ingress	28	18	57	
I.	Transit	Ingress	28	19	48	
I.	Shadow	Egress	28	21	11	
II.	Shadow	Ingress	28	21	47	
I.	Transit	Egress	28	22	2	
II.	Transit	Ingress	28	23	27	
II.	Shadow	Egress	29	0	20	
II.	Transit	Egress	29	2	0	
I.	Eclipse	Disapp. W.	29	16	16	11.3
I.	Occult.	Reapp.	29	19	20	
I.	Shadow	Ingress	30	13	26	
I.	Transit	Ingress	30	14	17	
I.	Shadow	Egress	30	15	40	
II.	Eclipse	Disapp. W.	30	16	16	37.3
I.	Transit	Egress W.	30	16	31	
II.	Occult.	Reapp.	30	20	30	
III.	Shadow	Ingress	30	22	16	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

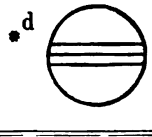
I.



III.



II.



IV. Not Eclipsed.

W.—Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

			d	h	m	s
III.	Shadow	Egress	1	0	54	
III.	Transit	Ingress	1	1	50	
III.	Transit	Egress	1	4	24	
I.	Eclipse	Disapp.	1	10	44	34.4
I.	Occult.	Reapp.	1	13	49	
I.	Shadow	Ingress	2	7	54	
I.	Transit	Ingress	2	8	47	
I.	Shadow	Egress	2	10	8	
I.	Transit	Egress	2	11	1	
II.	Shadow	Ingress	2	11	5	
II.	Transit	Ingress	2	12	50	
II.	Shadow	Egress	2	13	37	
II.	Transit	Egress	2	15	23	
I.	Eclipse	Disapp.	3	5	13	3.0
I.	Occult.	Reapp.	3	8	19	
I.	Shadow	Ingress	4	2	23	
I.	Transit	Ingress	4	3	16	
I.	Shadow	Egress	4	4	37	
I.	Transit	Egress	4	5	30	
II.	Eclipse	Disapp.	4	5	33	6.5
II.	Occult.	Reapp.	4	9	52	
III.	Eclipse	Disapp.	4	12	33	46 8
III.	Eclipse	Reapp.	4	14	57	21.6
III.	Occult.	Disapp. W.	4	16	14	
III.	Occult.	Reapp.	4	18	44	
I.	Eclipse	Disapp.	4	23	41	23.5
I.	Occult.	Reapp.	5	2	49	
I.	Shadow	Ingress	5	20	51	
I	Transit	Ingress	5	21	46	
I.	Shadow	Egress	5	23	5	
I.	Transit	Egress	6	0	0	
II.	Shadow	Ingress	6	0	23	
II.	Transit	Ingress	6	2	13	
II.	Shadow	Egress	6	2	55	
II.	Transit	Egress	6	4	46	
I.	Eclipse	Disapp. W.	6	18	9	50.9
I.	Occult.	Reapp.	6	21	18	
I.	Shadow	Ingress	7	15	19	
I.	Transit	Ingress W.	7	16	15	
I.	Shadow	Egress W.	7	17	33	
I.	Transit	Egress W.	7	18	29	
II.	Eclipse	Disapp.	7	18	49	37.3
II.	Occult.	Reapp.	7	23	13	
III.	Shadow	Ingress	8	2	14	
III.	Shadow	Egress	8	4	51	
III.	Transit	Ingress	8	6	10	
III.	Transit	Egress	8	8	40	
I.	Eclipse	Disapp.	8	12	38	12.6
I.	Occult.	Reapp. W.	8	15	48	
I.	Shadow	Ingress	9	9	47	
I.	Transit	Ingress	9	10	45	
I.	Shadow	Egress	9	12	1	
I.	Transit	Egress	9	12	59	
II.	Shadow	Ingress	9	13	40	
II.	Transit	Ingress W.	9	15	36	
II.	Shadow	Egress W.	9	16	13	
II.	Transit	Egress W.	9	18	9	
I.	Eclipse	Disapp.	10	7	6	40.1
I.	Occult.	Reapp.	10	10	18	
I.	Shadow	Ingress	11	4	16	
I.	Transit	Ingress	11	5	14	
I.	Shadow	Egress	11	6	30	
I.	Transit	Egress	11	7	28	
II.	Eclipse	Disapp.	11	8	6	6.5
II.	Occult.	Reapp.	11	12	34	
III.	Eclipse	Disapp. W.	11	16	31	59.0
III.	Eclipse	Reapp.	11	18	54	29.2
III.	Occult.	Disapp.	11	20	33	
III.	Occult.	Reapp.	11	22	59	
I.	Eclipse	Disapp.	12	1	34	59.5
I.	Occult.	Reapp.	12	4	47	
I.	Shadow	Ingress	12	22	44	
I.	Transit	Ingress	12	23	44	
I.	Shadow	Egress	13	0	58	
I.	Transit	Egress	13	1	58	
II.	Shadow	Ingress	13	2	58	
II.	Transit	Ingress	13	4	58	
II.	Shadow	Egress	13	5	30	
II.	Transit	Egress	13	7	31	
I.	Eclipse	Disapp.	13	20	3	25.6
I.	Occult.	Reapp.	13	23	16	
I.	Shadow	Ingress W.	14	17	13	
I.	Transit	Ingress W.	14	18	13	
I.	Shadow	Egress	14	19	27	
I.	Transit	Egress	14	20	27	
II.	Eclipse	Disapp.	14	21	22	37.3
II.	Occult.	Reapp.	15	1	55	
III.	Shadow	Ingress	15	6	12	
III.	Transit	Ingress	15	8	47	
III.	Shadow	Egress	15	10	27	
III.	Transit	Egress	15	12	54	
I.	Eclipse	Disapp.	15	14	31	46.5
I.	Occult.	Reapp. W.	15	17	46	
I.	Shadow	Ingress	16	11	41	
I.	Transit	Ingress	16	12	43	
I.	Shadow	Egress	16	13	55	
I.	Transit	Egress	16	14	56	
II.	Shadow	Ingress W.	16	16	16	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

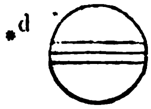
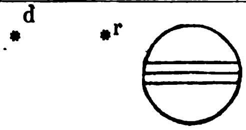
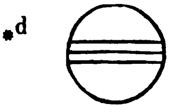
			d	h	m	s
II.	Transit	Ingress W.	16	18	20	
II.	Shadow	Egress	16	18	48	
II.	Transit	Egress	16	20	53	
I.	Eclipse	Disapp.	17	9	0	12.9
I.	Occult.	Reapp.	17	12	15	
I.	Shadow	Ingress	18	6	9	
I.	Transit	Ingress	18	7	12	
I.	Shadow	Egress	18	8	23	
I.	Transit	Egress	18	9	25	
II.	Eclipse	Disapp.	18	10	39	9.7
II.	Occult.	Reapp. W.	18	15	15	
III.	Eclipse	Disapp.	18	20	29	58.7
III.	Eclipse	Reapp.	18	22	51	24.3
III.	Occult.	Disapp.	19	0	49	
III.	Occult.	Reapp.	19	3	12	
I.	Eclipse	Disapp.	19	3	28	31.4
I.	Occult.	Reapp.	19	6	44	
I.	Shadow	Ingress	20	0	37	
I.	Transit	Ingress	20	1	41	
I.	Shadow	Egress	20	2	51	
I.	Transit	Egress	20	3	54	
II.	Shadow	Ingress	20	5	34	
II.	Transit	Ingress	20	7	42	
II.	Shadow	Egress	20	8	6	
II.	Transit	Egress	20	10	14	
I.	Eclipse	Disapp.	20	21	56	56.2
I.	Occult.	Reapp.	21	1	14	
I.	Shadow	Ingress	21	19	6	
I.	Transit	Ingress	21	20	11	
I.	Shadow	Egress	21	21	20	
I.	Transit	Egress	21	22	24	
II.	Eclipse	Disapp.	21	23	55	39.1
II.	Occult.	Reapp.	22	4	35	
III.	Shadow	Ingress	22	10	9	
III.	Shadow	Egress	22	12	44	
III.	Transit	Ingress W.	22	14	42	
I.	Eclipse	Disapp. W.	22	16	25	16.1
III.	Transit	Egress W.	22	17	5	
I.	Occult.	Reapp.	22	19	43	
I.	Shadow	Ingress	23	13	34	
I.	Transit	Ingress W.	23	14	40	
I.	Shadow	Egress W.	23	15	48	
I.	Transit	Egress W.	23	16	53	
II.	Shadow	Ingress	23	18	51	
II.	Transit	Ingress	23	21	3	
II.	Shadow	Egress	23	21	23	
II.	Transit	Egress	23	23	35	
I.	Eclipse	Disapp.	24	10	53	41.6
I.	Occult.	Reapp.	24	14	13	
I.	Shadow	Ingress	25	8	2	
I.	Transit	Ingress	25	9	9	
I.	Shadow	Egress	25	10	16	
I.	Transit	Egress	25	11	22	
II.	Eclipse	Disapp.	25	13	12	11.2
II.	Occult.	Reapp. W.	25	17	55	
III.	Eclipse	Disapp.	26	0	28	26.8
III.	Eclipse	Reapp.	26	2	48	48.0
III.	Occult.	Disapp.	26	5	4	
I.	Eclipse	Disapp.	26	5	21	59.8
III.	Occult.	Reapp.	26	7	22	
I.	Occult.	Reapp.	26	8	41	
I.	Shadow	Ingress	27	2	30	
I.	Transit	Ingress	27	3	38	
I.	Shadow	Egress	27	4	44	
I.	Transit	Egress	27	5	51	
II.	Shadow	Ingress	27	8	9	
II.	Transit	Ingress	27	10	24	
II.	Shadow	Egress	27	10	41	
II.	Transit	Egress	27	12	55	
I.	Eclipse	Disapp.	27	23	50	23.2
I.	Occult.	Reapp.	28	3	10	
I.	Shadow	Ingress	28	20	58	
I.	Transit	Ingress	28	22	7	
I.	Shadow	Egress	28	23	12	
I.	Transit	Egress	29	0	20	
II.	Eclipse	Disapp.	29	2	28	43.5
II.	Occult.	Reapp.	29	7	14	
III.	Shadow	Ingress	29	14	6	
III.	Shadow	Egress W.	29	16	40	
I.	Eclipse	Disapp. W.	29	18	18	42.2
III.	Transit	Ingress	29	18	54	
III.	Transit	Egress	29	21	12	
I.	Occult.	Reapp.	29	21	39	
I.	Shadow	Ingress W.	30	15	26	
I.	Transit	Ingress W.	30	16	36	
I.	Shadow	Egress W.	30	17	40	
I.	Transit	Egress	30	18	49	
II.	Shadow	Ingress	30	21	26	
II.	Transit	Ingress	30	23	45	
II.	Shadow	Egress	30	23	59	
II.	Transit	Egress	31	2	15	
I.	Eclipse	Disapp.	31	12	47	6.7
I.	Occult.	Reapp. W.	31	16	8	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		III.	
II.		IV.	Not Eclipsed.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

		h m			h m			h m			h m
Jan.	1	1 8.9	Mar.	18	2 11.5	June	2	3 27.3	Aug.	17	6 30.4
	2	19 36.6		19	20 37.3		3	21 55.5		19	1 0.6
	4	14 4.4		21	15 3.2		5	16 24.0		20	19 30.7
	6	8 32.2		23	9 29.1		7	10 52.4		22	14 1.0
	8	2 59.8		25	3 55.1		9	5 21.0		24	8 31.1
	9	21 27.3		26	22 21.1		10	23 49.6		26	3 1.4
	11	15 54.8		28	16 47.0		12	18 18.2		27	21 31.6
	13	10 22.2		30	11 13.0		14	12 46.9		29	16 1.9
	15	4 49.5	April	1	5 39.1		16	7 15.7		31	10 32.2
	16	23 16.8		3	0 5.2		18	1 44.5	Sept.	2	5 2.4
	18	17 43.9		4	18 31.3		19	20 13.3		3	23 32.6
	20	12 11.1		6	12 57.4		21	14 42.2	Nov.	6	17 43.2
	22	6 38.1		8	7 23.6		23	9 11.1		8	12 13.4
	24	1 5.2		10	1 49.9		25	3 40.1		10	6 43.4
	25	19 32.1		11	20 16.2		26	22 9.3		12	1 13.5
	27	13 59.0		13	14 42.5		28	16 38.4		13	19 43.5
	29	8 25.9		15	9 8.8		30	11 7.7		15	14 13.6
	31	2 52.6		17	3 35.3	July	2	5 36.8		17	8 43.5
Feb.	1	21 19.3		18	22 1.9		4	0 6.2		19	3 13.5
	3	15 45.9		20	16 28.4		5	18 35.5		20	21 43.4
	5	10 12.4		22	10 55.1		7	13 4.7		22	16 13.4
	7	4 38.9		24	5 21.8		9	7 33.9		24	10 43.2
	8	23 5.2		25	23 48.6		11	2 3.2		26	5 13.1
	10	17 31.7		27	18 15.5		12	20 32.5		27	23 42.8
	12	11 57.9		29	12 42.4		14	15 1.9		29	18 12.7
	14	6 24.2	May	1	7 9.4		16	9 31.4	Dec.	1	12 42.4
	16	0 50.4		3	1 36.5		18	4 1.0		3	7 12.1
	17	19 16.7		4	20 3.6		19	22 30.6		5	1 41.8
	19	13 42.8		6	14 30.8		21	17 0.5		6	20 11.4
	21	8 8.9		8	8 58.1		23	11 30.2		8	14 40.9
	23	2 34.9		10	3 25.4		25	6 0.2		10	9 10.5
	24	21 0.9		11	21 52.8		27	0 30.0		12	3 39.9
	26	15 26.8		13	16 20.3		28	19 0.0		13	22 9.4
	28	9 52.8		15	10 48.1		30	13 29.9		15	16 38.8
Mar.	2	4 18.7		17	5 15.5	Aug.	1	8 0.0		17	11 8.2
	3	22 44.7		18	23 43.2		3	2 29.9		19	5 37.5
	5	17 10.6		20	18 10.9		4	21 0.0		21	0 6.8
	7	11 36.5		22	12 38.8		6	15 29.9		22	18 36.0
	9	6 2.3		24	7 6.7		8	10 0.0		24	13 5.3
	11	0 28.3		26	1 34.7		10	4 30.1		26	7 34.4
	12	18 54.1		27	20 2.7		11	23 0.2		28	2 3.5
	14	13 19.9		29	14 30.9		13	17 30.2		29	20 32.5
	16	7 45.7		31	8 59.1		15	12 0.4		31	15 1.6

SATELLITE II.

		h m			h m			h m			h m
Jan	4	7 29.5	Feb.	1	17 15.7	Mar.	2	2 31.1	Mar.	30	11 34.3
	7	20 45.0		5	6 27.0		5	15 39.7	April	3	0 43.3
	11	9 59.3		8	19 36.9		9	4 46.9		6	13 51.3
	14	23 13.8		12	8 47.4		12	17 55.2		10	3 0.8
	18	12 26.9		15	21 56.5		16	7 2.4		13	16 9.8
	22	1 40.3		19	11 6.2		19	20 10.8		17	5 20.2
	25	14 52.3		23	0 14.5		23	9 18.1		20	18 30.1
	29	4 4.7		26	13 23.4		26	22 26.6		24	7 41.5

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

	h m		h m		h m		h m
April 27	20 52.4	June 16	14 27.1	Aug. 1	20 0.3	Nov. 16	13 45.0
May 1	10 4.8	20	3 46.4	5	9 23.0	20	3 7.5
4	23 16.7	23	17 5.4	8	22 46.0	23	16 29.7
8	12 30.1	27	6 25.5	12	12 8.9	27	5 51.7
12	1 43.1	30	19 45.4	16	1 32.2	30	19 13.7
15	14 57.6	July 4	9 6.3	19	14 55.6	Dec. 4	8 35.4
19	4 11.7	7	22 26.9	23	4 19.1	7	21 56.8
22	17 27.2	11	11 48.2	26	17 42.6	11	11 17.9
26	6 42.6	15	1 9.5	30	7 6.3	15	0 38.7
29	19 59.2	18	14 31.3	Sept. 2	20 30.1	18	13 59.3
June 2	9 15.6	22	3 53.1	Nov. 5	21 36.5	22	3 19.6
5	22 33.1	25	17 15.3	9	10 59.4	25	16 39.6
9	11 50.4	29	6 37.6	13	0 22.3	29	5 59.1
13	1 8.9						

SATELLITE III.

	h m		h m		h m		h m
Jan. 2	0 4.1	Mar. 21	14 15.1	June 8	5 19.5	Aug. 26	3 38.5
9	3 52.8	28	17 31.4	15	9 17.6	Sept. 2	8 3.1
16	7 36.1	April 4	20 49.6	22	13 19.1	Nov. 6	0 2.7
23	11 14.7	12	0 10.3	29	17 23.8	13	4 26.6
30	14 48.8	19	3 34.8	July 6	21 31.8	20	8 49.3
Feb. 6	18 18.3	26	7 2.4	14	1 43.2	27	13 10.1
13	21 44.0	May 3	10 34.3	21	5 57.4	Dec. 4	17 29.0
21	1 6.1	10	14 10.2	28	10 14.4	11	21 46.1
28	4 26.0	17	17 50.4	Aug. 4	14 32.9	19	2 0.6
Mar. 7	7 43.3	24	21 35.7	11	18 53.4	26	6 12.7
14	10 59.4	June 1	1 25.2	18	23 15.2		

SATELLITE IV.

	h m		h m		h m		h m
Jan. 14	1 40.3	Mar. 4	23 23.6	April 23	18 43.6	June 12	20 30.4
30	17 46.0	21	13 34.6	May 10	10 24.5	29	14 50.8
Feb. 16	8 56.0	April 7	3 52.8	27	3 0.2		

In the following Tables x and y are the rectangular coördinates for each Satellite, referred to the centre of the primary and the major and minor axes of the apparent ellipse described by the Satellite. x is positive on the *east* side of the planet; negative on the *west* side. y is positive when *north;* negative when *south.*

x' and y' are the coördinates which correspond to a constant value of the major axis and maximum value of the minor axis, as seen from the sun at its mean distance.

The factors by which x' and y' must be multiplied to obtain the coördinates x and y at any time, are given for each Satellite on pages 482–483.

p is the inclination of the minor axis of the apparent ellipse to the circle of declination; reckoned from the *north*, + towards the *east.*

COÖRDINATES IN THE MEAN APPARENT ELLIPSE DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (*t*) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

t	*x*′	*y*′	*t*	*x*′	*y*′	*t*	*x*′	*y*′
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+ 6.6	0 15 0	+ 87.1	— 4.0	1 6 0	—105.1	— 1.8
0 0 20	5.4	6.6	0 15 20	83.7	4.3	1 6 20	106.4	1.5
0 0 40	10.8	6.6	0 15 40	80.1	4.5	1 6 40	107.5	1.2
0 1 0	16.1	6.6	0 16 0	76.4	4.7	1 7 0	108.3	0.8
0 1 20	21.4	6.5	0 16 20	72.5	5.0	1 7 20	108.8	0.5
0 1 40	26.6	6.4	0 16 40	68.4	5.2	1 7 40	109.1	— 0.2
0 2 0	+ 31.8	+ 6.3	0 17 0	+ 64.1	— 5.4	1 8 0	—109.1	+ 0.1
0 2 20	36.9	6.2	0 17 20	59.6	5.5	1 8 20	108.9	0.5
0 2 40	42.0	6.1	0 17 40	55.0	5.7	1 8 40	108.4	0.8
0 3 0	46.9	6.0	0 18 0	50.3	5.9	1 9 0	107.6	1.1
0 3 20	51.7	5.8	0 18 20	45.5	6.0	1 9 20	106.6	1.4
0 3 40	56.4	5.7	0 18 40	40.5	6.1	1 9 40	105.3	1.8
0 4 0	+ 60.9	+ 5.5	0 19 0	+ 35.5	— 6.3	1 10 0	—103.8	+ 2.1
0 4 20	65.3	5.3	0 19 20	30.4	6.4	1 10 20	102.0	2.4
0 4 40	69.5	5.1	0 19 40	25.2	6.4	1 10 40	99.9	2.7
0 5 0	73.6	4.9	0 20 0	19.9	6.5	1 11 0	97.6	3.0
0 5 20	77.5	4.7	0 20 20	14.6	6.6	1 11 20	95.1	3.3
0 5 40	81.2	4.4	0 20 40	9.2	6.6	1 11 40	92.3	3.5
0 6 0	+ 84.7	+ 4.2	0 21 0	+ 3.8	— 6.6	1 12 0	— 89.3	+ 3.8
0 6 20	88.0	3.9	0 21 20	— 1 5	6.6	1 12 20	86.1	4.1
0 6 40	91.1	3.7	0 21 40	6.9	6.6	1 12 40	82.7	4.3
0 7 0	94.0	3.4	0 22 0	12.3	6.6	1 13 0	79.1	4.6
0 7 20	96.6	3.1	0 22 20	17.6	6.5	1 13 20	75.3	4.8
0 7 40	99.0	2.8	0 22 40	22.9	6.5	1 13 40	71.3	5.0
0 8 0	+101.1	+ 2.5	0 23 0	— 28.1	— 6.4	1 14 0	— 67.1	+ 5.2
0 8 20	103.0	2.2	0 23 20	33.3	6.3	1 14 20	62.8	5.4
0 8 40	104.7	1.9	0 23 40	38.4	6.2	1 14 40	58.3	5.6
0 9 0	106.1	1.6	1 0 0	43.4	6.1	1 15 0	53.7	5.8
0 9 20	107.3	1.3	1 0 20	48.3	5.9	1 15 20	49.0	5.9
0 9 40	108.1	0.9	1 0 40	53.1	5.8	1 15 40	44.1	6.1
0 10 0	+108.7	+ 0.6	1 1 0	— 57.7	— 5.6	1 16 0	— 39.1	+ 6.2
0 10 20	109.1	+ 0.3	1 1 20	62.2	5.4	1 16 20	34.0	6.3
0 10 40	109.1	— 0.1	1 1 40	66.6	5.2	1 16 40	28.9	6.4
0 11 0	109.0	0.4	1 2 0	70.8	5.0	1 17 0	23.7	6.5
0 11 20	108.6	0.7	1 2 20	74.8	4.8	1 17 20	18.4	6.5
0 11 40	107.9	1.0	1 2 40	78.6	4.6	1 17 40	13.0	6.6
0 12 0	+106.9	— 1.3	1 3 0	— 82.2	— 4.4	1 18 0	— 7.7	+ 6.6
0 12 20	105.7	1.7	1 3 20	85.6	4.1	1 18 20	— 2.3	6.6
0 12 40	104.2	2.0	1 3 40	88.9	3.8	1 18 40	+ 3.1	6.6
0 13 0	102.5	2.3	1 4 0	91.9	3.6	1 19 0	8.5	6.6
0 13 20	100.5	2.6	1 4 20	94.7	3.3	1 19 20	13.8	6.6
0 13 40	98.3	2.9	1 4 40	97.3	3.0	1 19 40	19.1	6.5
0 14 0	+ 95.8	— 3.2	1 5 0	— 99.6	— 2.7	1 20 0	+ 24.4	+ 6.5
0 14 20	93.1	3.5	1 5 20	101.7	2.4			
0 14 40	+ 90.2	— 3.7	1 5 40	—103.5	— 2.1			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

t	*x′*	*y′*	*t*	*x′*	*y′*	*t*	*x′*	*y′*
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+12.2	1 6 0	+139.5	− 7.3	2 12 0	−166.4	− 3.5
0 0 40	8.5	12.2	1 6 40	134.2	7.7	2 12 40	168.6	2.9
0 1 20	17.0	12.1	1 7 20	128.6	8.2	2 13 20	170.4	2.3
0 2 0	25.5	12.1	1 8 0	122.7	8.6	2 14 0	171.9	1.8
0 2 40	33.9	12.0	1 8 40	116.5	9.0	2 14 40	173.0	1.2
0 3 20	42.2	11.8	1 9 20	110.1	9.4	2 15 20	173.6	− 0.6
0 4 0	+ 50.5	+11.7	1 10 0	+103.4	− 9.8	2 16 0	−173.8	0.0
0 4 40	58.6	11.5	1 10 40	96.4	10.1	2 16 40	173.6	+ 0.6
0 5 20	66.5	11.3	1 11 20	89.2	10.5	2 17 20	172.9	1.2
0 6 0	74.3	11.0	1 12 0	81.7	10.8	2 18 0	171.8	1.8
0 6 40	81.9	10.8	1 12 40	74.1	11.0	2 18 40	170.3	2.4
0 7 20	89.4	10.5	1 13 20	66.3	11.3	2 19 20	168.4	3.0
0 8 0	+ 96.6	+10.1	1 14 0	+ 58.3	−11.5	2 20 0	−166.2	+ 3.5
0 8 40	103.6	9.8	1 14 40	50.2	11.7	2 20 40	163.5	4.1
0 9 20	110.3	9.4	1 15 20	42.0	11.8	2 21 20	160.4	4.7
0 10 0	116.7	9.0	1 16 0	33.7	12.0	2 22 0	156.9	5.2
0 10 40	122.9	8.6	1 16 40	25.3	12.1	2 22 40	153.0	5.8
0 11 20	128.8	8.2	1 17 20	16.8	12.1	2 23 20	148.8	6.3
0 12 0	+134.4	+ 7.7	1 18 0	+ 8.3	−12.2	3 0 0	−144.2	+ 6.8
0 12 40	139.6	7.3	1 18 40	− 0.2	12.2	3 0 40	139.3	7.3
0 13 20	144.5	6.8	1 19 20	8.8	12.2	3 1 20	134.1	7.8
0 14 0	149.0	6.3	1 20 0	17.3	12.1	3 2 0	128.5	8.2
0 14 40	153.2	5.7	1 20 40	25.7	12.1	3 2 40	122.6	8.6
0 15 20	157.0	5.2	1 21 20	34.1	12.0	3 3 20	116.4	9.0
0 16 0	+160.5	+ 4.7	1 22 0	− 42.4	−11.8	3 4 0	−109.9	+ 9.4
0 16 40	163.6	4.1	1 22 40	50.6	11.7	3 4 40	103.1	9.8
0 17 20	166.3	3.5	1 23 20	58.7	11.5	3 5 20	96.1	10.1
0 18 0	168.6	3.0	2 0 0	66.7	11.3	3 6 0	88.9	10.5
0 18 40	170.5	2.4	2 0 40	74.5	11.0	3 6 40	81.5	10.8
0 19 20	171.9	1.8	2 1 20	82.1	10.7	3 7 20	73.9	11.0
0 20 0	+172.9	+ 1.2	2 2 0	− 89.5	−10.4	3 8 0	− 66.1	+11.3
0 20 40	173.6	+ 0.6	2 2 40	96.7	10.1	3 8 40	58.1	11.5
0 21 20	173.8	0.0	2 3 20	103.7	9.8	3 9 20	50.0	11.7
0 22 0	173.6	− 0.6	2 4 0	110.4	9.4	3 10 0	41.8	11.8
0 22 40	172.9	1.2	2 4 40	116.8	9.0	3 10 40	33.5	12.0
0 23 20	171.8	1.8	2 5 20	123.0	8.6	3 11 20	25.1	12.1
1 0 0	+170.4	− 2.4	2 6 0	−128.9	− 8.2	3 12 0	− 16.6	+12.1
1 0 40	168.5	3.0	2 6 40	134.5	7.7	3 12 40	− 8.1	12.2
1 1 20	166.2	3.5	2 7 20	139.7	7.2	3 13 20	+ 0.4	12.2
1 2 0	163.5	4.1	2 8 0	144.6	6.7	3 14 0	9.0	12.2
1 2 40	160.4	4·7	2 8 40	149.1	6.2	3 14 40	17.5	12.1
1 3 20	157.0	5.2	2 9 20	153.3	5.7	3 15 20	26.0	12.1
1 4 0	+153.2	− 5.8	2 10 0	−157.1	− 5.2	3 16 0	+ 34.4	+12.0
1 4 40	149.0	6.3	2 10 40	160.6	4 6			
1 5 20	+144.4	− 6.8	2 11 20	−163 7	− 4.1			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

t	x′	y′	t	x′	y′	t	x′	y′
d h m	″	″	d h m	″	″	h d m	″	″
0 0 0	+ 0.0	+17.4	2 12 0	+225.4	−10.1	5 0 0	−262.3	− 5.6
0 1 20	13.5	17.4	2 13 20	217.3	10.8	5 1 20	266.4	4.8
0 2 40	26.9	17.3	2 14 40	208.6	11.5	5 2 40	269.8	4.0
0 4 0	40.3	17.2	2 16 0	199.5	12.1	5 4 0	272.6	3.2
0 5 20	53.6	17.1	2 17 20	189.9	12.7	5 5 20	274.7	2.3
0 6 40	66.8	16.9	2 18 40	179.9	13.3	5 6 40	276.2	1.5
0 8 0	+ 79.8	+16.7	2 20 0	+169.4	−13.8	5 8 0	−277.0	− 0.6
0 9 20	92.7	16.4	2 21 20	158.5	14.3	5 9 20	277.2	+ 0.2
0 10 40	105.3	16.1	2 22 40	147.2	14.8	5 10 40	276.7	1.1
0 12 0	117.6	15.8	3 0 0	135.6	15.2	5 12 0	275.5	1.9
0 13 20	129.7	15.4	3 1 20	123.7	15.6	5 13 20	273.7	2.7
0 14 40	141.5	15.0	3 2 40	111.5	16.0	5 14 40	271.2	3.6
0 16 0	+153.0	+14.5	3 4 0	+ 99.0	−16.3	5 16 0	−268.1	+ 4.4
0 17 20	164.1	14.0	3 5 20	86.3	16.6	5 17 20	264.4	5.2
0 18 40	174.7	13.5	3 6 40	73.3	16.8	5 18 40	260.1	6.0
0 20 0	184.9	13.0	3 8 0	60.2	17.0	5 20 0	255.1	6.8
0 21 20	194.7	12.4	3 9 20	47.0	17.2	5 21 20	249.5	7.6
0 22 40	204.1	11.8	3 10 40	33.6	17.3	5 22 40	243.3	8.3
1 0 0	+213.0	+11.1	3 12 0	+ 20.2	−17.4	6 0 0	−236.6	+ 9.1
1 1 20	221.4	10.5	3 13 20	+ 6.7	17.4	6 1 20	229.3	9.8
1 2 40	229.3	9.8	3 14 40	− 6.8	17.4	6 2 40	221.4	10.5
1 4 0	236.6	9.1	3 16 0	20.3	17.4	6 4 0	213.0	11.1
1 5 20	243.3	8.3	3 17 20	33.7	17.3	6 5 20	204.1	11.8
1 6 40	249.5	7.6	3 18 40	47.1	17.2	6 6 40	194.7	12.4
1 8 0	+255.1	+ 6.8	3 20 0	− 60.3	−17.0	6 8 0	−184.9	+13.0
1 9 20	260.0	6.0	3 21 20	73.4	16.8	6 9 20	174.7	13.5
1 10 40	264.3	5.2	3 22 40	86.3	16.6	6 10 40	164.1	14.0
1 12 0	268.0	4.4	4 0 0	99.0	16.3	6 12 0	153.0	14.5
1 13 20	271.1	3.6	4 1 20	111.5	16.0	6 13 20	141.5	15.0
1 14 40	273.6	2.7	4 2 40	123.7	15.6	6 14 40	129.7	15.4
1 16 0	+275.5	+ 1.9	4 4 0	−135.7	−15.2	6 16 0	−117.6	+15.8
1 17 20	276.7	1.1	4 5 20	147.2	14.8	6 17 20	105.2	16.1
1 18 40	277.2	+ 0.2	4 6 40	158.4	14.3	6 18 40	92.6	16.4
1 20 0	277.0	− 0.6	4 8 0	169.3	13.8	6 20 0	79.8	16.7
1 21 20	276.2	1.5	4 9 20	179.8	13.3	6 21 20	66.8	16.9
1 22 40	274.7	2.3	4 10 40	189.9	12.7	6 22 40	53.6	17.1
2 0 0	+272.6	− 3.2	4 12 0	−199.5	−12.1	7 0 0	− 40.3	+17.2
2 1 20	269.8	4.0	4 13 20	208.6	11.5	7 1 20	26.9	17.3
2 2 40	266.4	4.8	4 14 40	217.3	10.8	7 2 40	− 13.4	17.4
2 4 0	262.3	5.6	4 16 0	225.5	10.1	7 4 0	+ 0.1	17.4
2 5 20	257.6	6.4	4 17 20	233.1	9.4	7 5 20	13.6	17.4
2 6 40	252.3	7.2	4 18 40	240.1	8.7	7 6 40	27.0	17.3
2 8 0	+246.4	− 8.0	4 20 0	−246.5	− 8.0	7 8 0	+ 40.4	+17.2
2 9 20	240.0	8.7	4 21 20	252.3	7.2			
2 10 40	+233.0	− 9.4	4 22 40	−257.6	− 6.4			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t	*x′*	*y′*	*t*	*x′*	*y′*	*t*	*x′*	*y′*
d h			d h			d h		
0 0	+ 0″.0	+34″.8	5 18	+406″.2	−19″.3	11 12	−449″.0	−13″.5
0 3	22.8	34.8	5 21	393.1	20.6	11 15	457.4	12.0
0 6	45.6	34.7	6 0	379.2	21.9	11 18	464.8	10.5
0 9	68.3	34.5	6 3	364.4	23.1	11 21	471.2	8.9
0 12	90.9	34.2	6 6	348.8	24.3	12 0	476.5	7.3
0 15	113.2	33.9	6 9	332.5	25.5	12 3	480.8	5.7
0 18	+135.3	+33.5	6 12	+315.4	−26.6	12 6	−484.0	− 4.1
0 21	157.1	33.0	6 15	297.6	27.6	12 9	486.2	2.5
1 0	178.5	32.4	6 18	279.2	28.5	12 12	487.3	− 0.8
1 3	199.6	31.8	6 21	260.2	29.4	12 15	487.3	+ 0.8
1 6	220.3	31.1	7 0	240.6	30.3	12 18	486.3	2.4
1 9	240.4	30.3	7 3	220.5	31.1	12 21	484.2	4.0
1 12	+260.0	+29.5	7 6	+199.9	−31.8	13 0	−480.9	+ 5.7
1 15	279.0	28.6	7 9	178.8	32.4	13 3	476.6	7.3
1 18	297.4	27.6	7 12	157.4	33.0	13 6	471.3	8.9
1 21	315.2	26.6	7 15	135.6	33.5	13 9	465.0	10.5
2 0	332.3	25.5	7 18	113.5	33.9	13 12	457.6	12.0
2 3	348.6	24.3	7 21	91.2	34.2	13 15	449.3	13.5
2 6	+364.1	+23.1	8 0	+ 68.7	−34.5	13 18	−440.0	+15.0
2 9	378.9	21.9	8 3	46.0	34.7	13 21	429.7	16.4
2 12	392.9	20.6	8 6	23.2	34.8	14 0	418.5	17.8
2 15	406.0	19.3	8 9	+ 0.3	34.8	14 3	406.3	19.2
2 18	418.2	17.9	8 12	− 22.5	34.8	14 6	393.2	20.6
2 21	429.5	16.5	8 15	45.3	34.7	14 9	379.3	21.9
3 0	+439.8	+15.0	8 18	− 68.0	−34.5	14 12	+364.6	+23.1
3 3	449.1	13.5	8 21	90.5	34.2	14 15	349.1	24.3
3 6	457.5	12.0	9 0	112.9	33.9	14 18	332.8	25.4
3 9	464.9	10.5	9 3	135.0	33.5	14 21	315.7	26.5
3 12	471.3	8.9	9 6	156.8	33.0	15 0	298.0	27.5
3 15	476.6	7.3	9 9	178.2	32.4	15 3	279.6	28.5
3 18	+480.8	+ 5.7	9 12	−199.3	−31.8	15 6	−260.5	+29.4
3 21	484.0	4.1	9 15	220.0	31.1	15 9	240.9	30.3
4 0	486.2	2.5	9 18	240.1	30.3	15 12	220.8	31.1
4 3	487.3	+ 0.8	9 21	259.7	29.5	15 15	200.2	31.8
4 6	487.3	− 0.8	10 0	278.7	28.6	15 18	179.2	32.4
4 9	486.3	2.4	10 3	297.2	27.6	15 21	157.7	33.0
4 12	+484.2	− 4.1	10 6	−315.0	−26.6	16 0	−135.0	+33.5
4 15	480.9	5.7	10 9	332.1	25.5	16 3	113.8	33.9
4 18	476.6	7.3	10 12	348.4	24.4	16 6	91.5	34.2
4 21	471.3	8.9	10 15	363.9	23.2	16 9	69.0	34.5
5 0	465.0	10.4	10 18	378.7	21.9	16 12	46.3	34.7
5 3	457.7	12.0	10 21	392.7	20.6	16 15	23.5	34.8
5 6	+449.3	−13.5	11 0	−405.8	−19.3	16 18	− 0.6	+34.8
5 9	439.9	15.0	11 3	418.0	17.9	16 21	+ 22.2	34.8
5 12	429.6	16.4	11 6	429.3	16.5	17 0	+ 45.0	+34.7
5 15	+418.4	−17.9	11 9	−439.6	−15.0			

SATELLITE I.

Date,	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date,	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
1874.	Factor for x'.	Factor for y'.	p.	x.	y.	1874.	Factor for x'.	Factor for y'.	p.	x.	y.
Jan. 1	1.004	−0.646	+25° 23′.2	−37″	−4″	June 5	0.994	−0.562	+25° 21′.7	+37″	−3″
8	1.026	0.672	25 22.7	37	4	12	0.973	0.548	25 22.5	36	3
15	1.048	0.697	25 22.5	37	4	19	0.953	0.535	25 23.5	35	3
22	1.070	0.721	25 22.7	37	4	26	0.934	0.524	25 24.6	34	3
29	1.091	0.743	25 23.2	36	5	July 4	0.917	0.516	25 25.5	33	3
Feb. 5	1.111	−0.762	+25 23.8	−34	−5	11	0.900	−0.509	+25 26.2	+32	−3
12	1.128	0.776	25 24.5	32	5	18	0.885	0.505	25 26.6	31	3
19	1.143	0.787	25 25.4	30	5	25	0.871	0.502	25 26.6	30	3
26	1.155	0.793	25 26.2	28	5	Aug. 1	0.859	0.501	25 26.0	29	3
Mar. 5	1.164	0.795	25 26.8	26	5	8	0.848	0.501	25 24.7	27	3
12	1.169	−0.791	+25 27.0	−23	−5	15	0.838	−0.503	+25 22.6	+26	−3
19	1.170	0.781	25 26.9	+22	5	22	0.829	0.506	25 19.7	24	3
26	1.166	0.768	25 26.5	25	5	29	0.822	0.510	25 16.0	+22	3
Apr. 3	1.158	0.751	25 25.8	28	5	Nov. 6	0.822	0.613	23 43.5	−21	4
10	1.149	0.731	25 24.8	30	5	13	0.829	0.630	23 33.5	23	4
17	1.134	0.709	25 23.8	32	5	20	0.838	0.648	23 20.8	24	4
24	1.117	−0.686	+25 22.7	+34	−4	27	0.848	−0.667	+23 6.9	−26	−4
May 1	1.099	0.663	25 21.7	36	4	Dec. 5	0.860	0.688	22 52.8	27	4
8	1.079	0.640	25 21.1	37	4	12	0.873	0.710	22 39.0	29	4
15	1.058	0.618	25 20.8	37	4	19	0.887	0.732	22 25.6	30	4
22	1.036	0.597	25 20 8	37	4	26	0.903	−0.757	+22 12.8	−31	−4
29	1.015	−0.578	+25 21.1	+37	−4						

SATELLITE II.

Date.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
1874.	Factor for x'.	Factor for y'.	p.	x.	y.	1874.	Factor for x'.	Factor for y'.	p.	x.	y.
Jan. 4	1.014	−0.642	+25° 4′.0	−48″	−8″	June 9	0.982	−0.555	+25° 4′.4	+48″	−7″
11	1.036	0.667	25 3.6	48	8	16	0.962	0.541	25 5.1	47	6
18	1.059	0.688	25 3.5	47	8	23	0.943	0.528	25 5.9	46	6
25	1.081	0.710	25 3.8	46	8	30	0.925	0.517	25 6.6	44	6
Feb. 1	1.101	0.729	25 4.4	44	8	July 7	0.908	0.509	25 7.0	42	6
8	1.119	−0.746	+25 5.0	−41	−9	15	0.892	−0.502	+25 7.1	+40	−6
15	1.134	0.759	25 5.8	38	9	22	0.877	0.496	25 6.9	38	6
23	1.148	0.769	25 7.0	34	9	29	0.864	0.491	25 6.2	36	6
Mar. 2	1.160	0.772	25 8.0	30	9	Aug. 5	0.853	0.488	25 4.8	34	6
9	1.167	0.772	25 8.7	25	9	12	0.842	0.486	25 2.6	32	6
16	1.169	−0.767	+25 8.9	−20	−9	19	0.833	−0.486	+24 59.6	+29	−6
23	1.166	0.758	25 8.8	+24	9	26	0.825	0.486	24 55.8	27	6
30	1.160	0.745	25 8.4	29	9	Sept. 2	0.819	0.488	24 51.2	+24	6
Apr. 6	1.152	0.730	25 7.8	34	9	Nov. 5	0.821	0.551	23 24.4	−24	7
13	1.141	0.712	25 6.9	38	9	13	0.828	0.563	23 10.8	27	7
20	1.126	0.692	25 5.9	41	8	20	0.837	0.576	22 56.9	29	7
27	1.108	−0.670	+25 4.9	+44	−8	27	0.847	−0.591	+22 42.8	−31	−7
May 4	1.089	0.649	25 4.1	46	8	Dec. 4	0.858	0.606	22 28.6	33	7
12	1.068	0.628	25 3.6	47	8	11	0.871	0.622	22 14.6	35	7
19	1.046	0.607	25 3.4	48	7	18	0.886	0.640	22 1.0	37	8
26	1.024	0.588	25 3.5	48	7	25	0.902	−0.660	+21 48.0	−39	−8
June 2	1.003	−0.571	+25 3.8	+48	−7						

SATELLITE III.

Date, 1874.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date. 1874.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x′.	Factor for y′.	p.	Dis.		Reap.			Factor for x′.	Factor for y′.	p.	Dis.		Reap.	
				x.	y.	x.	y.					x.	y.	x.	y.
Jan. 2	1.007	−0.575	+25° 30′.6	−65″	−10″	−34″	−10″	June 8	0.983	−0.481	+25° 27′.8	+37″	− 8″	+64″	−8″
9	1.030	0.600	25 30.2	65	10	33	10	15	0.963	0.469	25 28.8	36	8	63	8
16	1.052	0.623	25 30.1	64	11	31	11	22	0.945	0.460	25 30.0	35	8	62	8
23	1.073	0.645	25 30.3	62	11	28	11	29	0.927	0.452	25 31.2	34	8	60	8
30	1.094	0.664	25 30.8	59	11	25	11	July 6	0.910	0.446	25 32.2	32	8	57	8
Feb. 6	1.114	−0.680	+25 31.3	−55	−11	−20	−11	14	0.894	−0.442	+25 33.1	+30	− 8	+54	−8
13	1.132	0.693	25 31.9	50	12	. .	. .	21	0.879	0.440	25 33.6	27	8	51	8
21	1.147	0.702	25 32.8	43	12	. .	. .	28	0.866	0.440	25 33.6	24	8	48	8
28	1.157	0.705	25 33.4	36	12	. .	. .	Aug. 4	0.854	0.440	25 32.9	21	8	44	8
Mar. 7	1.165	0.704	25 33.8	29	12	. .	. .	11	0.843	0,442	25 31.5	18	8	40	8
14	1.169	−0.699	+25 33.8	−21	−12	. .	. .	18	0.833	−0.445	+25 29.2	+14	− 8	+36	−8
21	1.168	0.689	25 33.5	. .	. .	+23	−12	26	0.825	0.450	25 26.1	. .	. .	32	8
28	1 163	0.674	25 32.9	. .	. .	31	12	Sept. 2	0.819	0.456	25 22.1	. .	. .	+28	8
Apr. 4	1.155	0.657	25 31.9	. .	. .	38	11	Nov. 6	0.821	0.561	24 0.0	−28	10	. .	. .
12	1.144	0.637	25 30.6	. .	. .	45	11	13	0.828	0.578	23 46.6	32	10	. .	. .
19	1.129	0.614	25 29.5	. .	. .	51	11	20	0.837	0.596	23 32.9	35	10	−15	10
26	1.112	−0.592	+25 28.6	+23	−10	+56	−10	27	0.847	−0.615	+23 18.9	−39	−11	−19	11
May 3	1.093	0.571	25 27.7	27	10	60	10	Dec. 4	0.859	0.636	23 4.8	43	11	22	11
10	1.073	0.551	25 27.0	31	9	63	9	11	0.872	0.658	22 50.9	46	12	25	12
17	1.051	0.531	25 26.6	34	9	64	9	19	0.887	0.681	22 37.5	59	12	28	12
24	1.028	0.512	25 26.6	36	9	65	9	26	0.903	−0.706	+22 25.0	−52	−12	−31	12
June 1	1.005	−0.495	+25 27.0	+37	− 9	+65	− 9								

SATELLITE IV.

Date. 1874.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date, 1874.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x′.	Factor for y′.	p.	Dis.		Reap.			Factor for x′.	Factor for y′.	p.	Dis.		Reap.	
				x.	y.	x.	y.					x.	y.	x.	y.
Jan. 14	1.045	−0.504	+25° 18′.6	−97″	−17″	−72″	−17″	Apr. 7	1.153	−0.538	+25° 18′.7	+32″	−19″	+51″	−19″
30	1.096	0.545	25 19.2	86	19	62	19	23	1.119	0.497	25 15.8	58	17	75	17
Feb. 16	1.136	0.573	25 20.6	65	20	42	20	May 10	1.073	0.454	25 13.7	76	16	89	16
Mar. 4	1.162	0.581	25 21.7	−35	−20	−13	20	27	1.022	0.417	25 13.6	84	14	94	14
21	1.169	−0.568	+25 21.1	. .	. .	+20	−20	June 12	0.973	−0.387	+25 15.5	+85	−13	+92	−13

THE APPARENT ELEMENTS OF SATURN'S RING.

Washington Mean Noon.		*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Ecliptic,
Jan.	0	34″.52	11″.89	+7° 31′.8	+20° 9′.1	+19° 25′.7	358° 54′	315° 57′
	20	34.28	11.35	7 29.5	19 19.9	19 13.7	356 33	313 36
Feb.	9	34.37	10.89	7 26.5	18 28.6	19 1.7	354 11	311 14
March	1	34.79	10.54	7 22.9	17 38.5	18 49.5	351 59	309 2
	21	35.50	10.32	7 19.2	16 53.7	18 37.1	350 3	307 6
April	10	36.48	10.24	7 16.0	16 17.9	18 24.7	348 31	305 34
	30	37.67	10.33	7 13.7	15 54.5	18 12.1	347 30	304 33
May	20	38.96	10.59	7 12.6	15 46.1	17 59.4	347 3	304 6
June	9	40.22	11.01	7 13.2	15 53.4	17 46.5	347 13	304 16
	29	41.27	11.56	7 15.1	16 15.7	17 33.6	347 57	305 0
July	19	41.93	12.12	7 17.9	16 48.2	17 20.5	349 8	306 11
Aug.	8	42.07	12.54	7 20.9	17 25.0	17 7.3	350 32	307 35
	28	41.66	12.86	7 23.4	17 58.7	16 54.0	351 52	308 55
Sept.	17	40.78	12.86	7 25.3	18 23.2	16 40.5	352 53	309 56
Oct.	7	39.59	12.62	7 26.3	18 34.1	16 27.0	353 21	310 25
	27	38.29	12.15	7 25.8	18 29.7	16 13.3	353 10	310 14
Nov.	16	37.05	11.55	7 24.4	18 10.1	15 59.5	352 21	309 25
Dec.	6	35.99	10.89	7 21.7	17 36.7	15 45.6	350 59	308 3
	26	35.18	10.21	7 17.9	16 52.1	15 31.6	349 10	306 14
	31	35.02	10.04	+7 16.8	+16 39.4	+15 28.1	348 40	305 44

Factors which are to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring . =0.8801 log. Factor=9.9445
The outer ellipse of the inner Ring =0.8599 " =9.9344
The inner ellipse of the inner Ring =0.6650 " =9.8228
The inner ellipse of Bond's dusky Ring=0.5486 " =9.7392

NOTE.—The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1874.	Venus.	Mars.	1874.	Venus.	Mars.
January 1	.977	.923	July 30	.738	.998
31	.997	.942	August 29	.628	.991
March 2	1.000	.962	September 28	.483	.980
April 1	.987	.977	October 28	.305	.964
May 1	.956	.989	November 27	.043	.933
31	.904	.996	December 27	.105	.924
June 30	.829	1.000			

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	'
Jan.	0	21	16	☉ in Perigee.		
	3	17	35	♀ in ☋		
	3	21	44	☿ in ☋		
	4	2	42	☌ ⛢ ☾ ..... ⛢ —	4	32
	5	19	-	♆ stationary.		
	8	10	55	☌ ♃ ☾ ..... ♃ —	2	12
	14	2	3	☿ in Aphelion.		
	15	7	58	□ ♆ ☉		
	16	4	0	♃ stationary.		
	16	18	23	☌ ☿ ☾ ..... ☿ +	3	10
	16	21	45	☌ ♀ ☾ ..... ♀ +	4	6
	17	23	21	☌ ♄ ☾ ..... ♄ +	4	36
	20	18	25	☌ ♂ ☾ ..... ♂ +	3	45
	22	2	16	☌ ☿ ♀ ..... ☿ —	1	4
	23	16	15	☌ ♆ ☾ ..... ♆ —	0	28
	24	11	54	☌ ♄ ☉		
	27	19	51	☍ ⛢ ☉		
	28	9	10	☌ ☿ ♄ ..... ☿ —	1	35
	30	15	11	☌ ♀ ♄ ..... ♀ —	0	30
	31	8	13	☌ ⛢ ☾ ..... ⛢ —	4	28
Feb.	2	21	6	☌ ☿ ☉ Sup.		
	3	11	56	☿ greatest Hel. Lat. S.		
	4	17	42	☌ ♃ ☾ ..... ♃ —	1	50
	7	1	4	♀ in Aphelion.		
	14	15	13	☌ ♄ ☾ ..... ♄ +	4	40
	15	21	2	☌ ♀ ☾ ..... ♀ +	3	43
	16	18	49	☌ ☿ ☾ ..... ☿ +	3	36
	18	15	45	☌ ♂ ☾ ..... ♂ +	2	29
	20	0	21	☌ ♆ ☾ ..... ♆ —	0	45
	22	11	47	☿ in ☊		
	22	19	21	☌ ♀ ☉ Sup.		
	27	1	41	☿ in Perihelion.		
	27	12	16	☌ ⛢ ☾ ..... ⛢ —	4	33
Mar.	1	14	41	♀ greatest Hel. Lat. S.		
	2	0	33	☿ greatest elong. E.	18	12
	3	19	8	☌ ♃ ☾ ..... ♃ —	1	49
	8	10	45	☿ stationary.		
	9	9	15	☿ greatest Hel. Lat. N.		
	14	6	34	☌ ♄ ☾ ..... ♄ +	4	46
	14	12	30	☌ ☿ ♀ ..... ☿ +	5	22
	16	21	30	☍ ♃ ☉		
	17	10	1	☌ ☿ ☾ ..... ☿ +	7	23
	17	18	5	☌ ♆ ♂ ..... ♆ —	1	44
	17	20	22	☌ ♀ ☾ ..... ♀ +	1	42
	18	9	5	☌ ☿ ☉ Inf.		
	19	11	30	☌ ♆ ☾ ..... ♆ —	0	58
	19	13	20	♂ in ☊		
	19	13	36	☌ ♂ ☾ ..... ♂ +	0	42
	20	1	30	☉ enters ♈, spring com.		
	26	16	33	☌ ⛢ ☾ ..... ⛢ —	4	42
	30	18	7	☌ ♃ ☾ ..... ♃ —	2	5
	30	19	54	☿ stationary.		
April	1	20	59	☿ in ☋		
	6	16	58	☌ ♆ ♀ ..... ♆ —	0	57
	10	19	11	☌ ♄ ☾ ..... ♄ +	4	50
	12	1	19	☿ in Aphelion.		
	13	7	-	⛢ stationary.		
	13	21	26	☌ ☿ ☾ ..... ☿ +	1	17
	15	7	35	☿ greatest elong. W.	27	31
	15	-	-	☉ eclipsed, invis. at Wash.		
	16	0	12	☌ ♆ ☾ ..... ♆ —	1	6
	16	20	1	☌ ♀ ☾ ..... ♀ —	0	58
	17	10	51	☌ ♂ ☾ ..... ♂ —	1	3
	17	18	25	☌ ♆ ☉		
	22	22	58	☌ ⛢ ☾ ..... ⛢ —	4	48
	26	5	55	□ ⛢ ☉		
	26	18	50	☌ ♃ ☾ ..... ♃ —	2	23
	26	21	31	♀ in ☊		
May	1	-	-	☾ eclipsed, invis. at Wash.		
	2	11	12	☿ greatest Hel. Lat. S.		
	3	11	17	☌ ♀ ♂ ..... ♀ —	0	12
	3	23	19	□ ♄ ☉		
	6	23	24	☌ ♆ ☿ ..... ♆ +	0	32
	8	4	3	☌ ♄ ☾ ..... ♄ +	4	46
	13	12	17	☌ ♆ ☾ ..... ♆ —	1	13
	14	10	33	☌ ☿ ☾ ..... ☿ —	1	59
	16	6	40	☌ ♂ ☾ ..... ♂ —	2	27
	16	18	50	☌ ♀ ☾ ..... ♀ —	2	42
	18	19	40	♃ stationary.		
	20	8	12	☌ ⛢ ☾ ..... ⛢ —	4	46
	21	11	2	☿ in ☊		
	24	0	23	☌ ♃ ☾ ..... ♃ —	2	29
	24	3	13	☌ ☿ ☉ Sup.		
	24	10	30	♄ stationary.		
	26	0	57	☿ in Perihelion.		
	30	10	48	♀ in Perihelion.		
June	1	6	1	☌ ☿ ♂ ..... ☿ +	0	55
	4	9	46	☌ ♄ ☾ ..... ♄ +	4	34
	5	8	31	☿ greatest Hel. Lat. N.		
	9	22	7	☌ ♆ ☾ ..... ♆ —	1	24
	13	10	6	□ ♃ ☉		
	14	0	51	☌ ♂ ☾ ..... ♂ —	3	24
	15	5	46	☌ ☿ ☾ ..... ☿ —	3	0
	15	18	13	☌ ♀ ☾ ..... ♀ —	3	22
	16	19	23	☌ ⛢ ☾ ..... ⛢ —	4	39
	20	11	24	☌ ♃ ☾ ..... ♃ —	2	17
	20	22	0	☉ enters ♋, summer com.		
	21	9	20	♀ greatest Hel. Lat. N.		
	27	14	20	☿ greatest elong. E.	25	40
	28	1	10	☌ ⛢ ♀ ..... ⛢ —	1	12
	28	20	15	☿ in ☋		
July	1	4	3	☌ ♄ ☾ ..... ♄ +	4	21
	3	5	28	☉ in Apogee.		
	4	20	48	☌ ♂ ☉		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
July	7	5	25	☌ ♆ ☾ ..... ♆ —	1	41
	9	0	35	☿ in Aphelion.		
	10	19	12	☿ stationary.		
	12	17	46	☌ ♂ ☾ ..... ♂ —	3	56
	14	3	38	☌ ☿ ☾ ..... ☿ —	8	52
	14	7	1	☌ ♅ ☾ ..... ♅ —	4	32
	15	20	34	☌ ♀ ☾ ..... ♀ —	3	10
	18	2	40	☌ ♃ ☾ ..... ♃ —	1	52
	23	4	47	□ ♆ ☉		
	25	7	39	☌ ☿ ☉ Inf.		
	28	19	0	☌ ♄ ☾ ..... ♄ +	4	15
	29	2	25	☌ ☿ ♂ ..... ☿ —	5	52
	29	10	28	☿ greatest Hel. Lat. S.		
Aug.	2	18	9	☌ ♅ ☉		
	2	20	25	☍ ♄ ☉		
	3	11	18	☌ ♆ ☾ ..... ♆ —	2	0
	3	19	-	♆ stationary.		
	4	7	19	☿ stationary.		
	9	19	33	☌ ☿ ☾ ..... ☿ —	7	11
	10	10	5	☌ ♂ ☾ ..... ♂ —	4	2
	10	17	46	☌ ♅ ☾ ..... ♅ —	4	30
	12	6	56	☌ ♀ ♃ ..... ♀ —	0	58
	12	20	54	☿ greatest elong. W.	18	44
	14	20	23	☌ ♃ ☾ ..... ♃ —	1	19
	15	1	50	☌ ♀ ☾ ..... ♀ —	2	15
	16	10	31	♀ in ☋		
	17	10	18	☿ in ☊		
	17	15	17	☌ ♅ ♂ ..... ♅ —	0	34
	20	14	47	☌ ♅ ☿ ..... ♅ —	0	2
	22	0	12	☿ in Perihelion.		
	22	4	50	☌ ☿ ♂ ..... ☿ —	0	13
	25	1	22	☌ ♄ ☾ ..... ♄ +	4	17
	25	12	-	♃ greatest Hel. Lat. N.		
	30	17	40	☌ ♆ ☾ ..... ♆ —	2	15
Sept.	1	7	46	☿ greatest Hel. Lat. N.		
	7	2	50	☌ ☿ ☉ Sup.		
	7	3	1	☌ ♅ ☾ ..... ♅ —	4	33
	8	2	41	☌ ♂ ☾ ..... ♂ —	3	38
	10	5	30	☌ ☿ ☾ ..... ☿ —	1	47
	11	15	5	☌ ♃ ☾ ..... ♃ —	0	45
	14	5	11	☌ ♀ ☾ ..... ♀ —	1	23
	19	17	16	♀ in Aphelion.		
	20	21	27	♂ greatest Hel. Lat. N.		
	20	22	2	☌ ☿ ♃ ..... ☿ —	0	43
	21	9	6	☌ ♄ ☾ ..... ♄ +	4	24
	22	12	15	☉ enters ♎ autumn com.		
	24	19	31	☿ in ☋		
	27	1	51	☌ ♆ ☾ ..... ♆ —	2	20
	28	22	0	♀ greatest elong. E.	46	39
Oct.	4	10	59	☌ ♅ ☾ ..... ♅ —	4	37
	4	20	41	☌ ♃ ☉		
	4	23	50	☿ in Aphelion.		
Oct.	6	20	23	☌ ♂ ☾ ..... ♂ —	2	39
	9	9	58	☌ ♃ ☾ ..... ♃ —	0	9
	9	-	-	☉ eclipsed, invis. at Wash.		
	11	15	30	♄ stationary.		
	11	17	31	☌ ☿ ☾ ..... ☿ —	0	45
	12	7	25	♀ greatest Hel. Lat. S.		
	13	22	25	☌ ♀ ☾ ..... ♀ —	1	4
	18	17	23	☌ ♄ ☾ ..... ♄ +	4	28
	22	6	6	☍ ♆ ☉		
	23	15	36	☿ greatest elong. E.	24	10
	24	-	-	☾ eclipsed, vis. at Wash.		
	24	11	42	☌ ♆ ☾ ..... ♆ —	2	16
	24	12	-	♃ in Aphelion.		
	25	9	43	☿ greatest Hel. Lat. S.		
	25	12	28	♂ in Aphelion.		
	30	20	20	□ ♄ ☉		
	31	18	39	☌ ♅ ☾ ..... ♅ —	4	36
Nov.	2	-	-	♀ greatest brilliancy.		
	3	19	16	☿ stationary.		
	4	15	21	☌ ♂ ☾ ..... ♂ —	1	7
	6	4	33	☌ ♃ ☾ ..... ♃ +	0	28
	7	0	43	□ ♅ ☉		
	9	12	45	☌ ☿ ☾ ..... ☿ +	1	34
	11	14	41	☌ ♀ ☾ ..... ♀ —	0	11
	13	9	33	☿ in ☊		
	14	8	51	☌ ☿ ☉ Inf.		
	15	1	49	☌ ♄ ☾ ..... ♄ +	4	23
	17	23	27	☿ in Perihelion.		
	18	2	4	♀ stationary.		
	20	8	-	♅ stationary.		
	20	21	39	☌ ♆ ☾ ..... ♆ —	2	13
	23	11	25	☿ stationary.		
	28	3	0	☌ ♅ ☾ ..... ♅ —	4	27
	28	7	1	☿ greatest Hel. Lat. N.		
Dec.	1	13	34	☿ greatest elong. W.	20	29
	3	11	20	☌ ♂ ☾ ..... ♂ +	0	43
	3	22	31	☌ ♃ ☾ ..... ♃ +	1	9
	6	14	53	☌ ☿ ☾ ..... ☿ +	4	38
	7	14	14	♀ in ☊		
	8	8	21	☌ ♀ ☾ ..... ♀ +	4	14
	8	11	12	☌ ♀ ☉ Inf. and transit.		
	12	11	2	☌ ♄ ☾ ..... ♄ +	4	11
	15	9	43	☌ ♂ ♃ ..... ♂ +	0	3
	18	5	50	☌ ♆ ☾ ..... ♆ —	2	18
	18	7	43	☌ ☿ ♀ ..... ☿ —	2	12
	21	6	14	☉ enters ♑, winter com.		
	21	18	46	☿ in ☋		
	25	11	55	☌ ♅ ☾ ..... ♅ —	4	15
	28	10	52	♀ stationary.		
	30	12	52	☉ in Perigee.		
	31	15	4	☌ ♃ ☾ ..... ♃ +	1	53
	31	23	6	☿ in Aphelion.		

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(*North Latitudes and West Longitudes are considered as positive.*)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
Åbo, ...	+60 26 56.8	— 6 37 20.32	—.2759296	260 39 55.2
Albany, ...	+42 39 49.5	— 0 13 12.87	—.0091767	356 41 47.0
Allegheny, . . .	+40 27 36.0	+ 0 11 50.66	+.0082252	2 57 39.9
Altona, ...	+53 32 45.3	— 5 47 58.54	—.2416498	273 0 21.9
Ann Arbor, . . .	+42 16 48.0	+ 0 26 42.67	+.0185494	6 40 40.0
Armagh, ...	+54 21 12.7	— 4 41 36.92	—.1955662	289 35 46.2
Athens, ...	+37 58 20.0	— 6 43 7.58	—.2799488	259 13 6.3
Berlin, ...	+52 30 16.7	— 6 1 47.77	—.2512473	269 33 3.4
Bilk, ...	+51 12 25.0	— 5 35 17.77	—.2328445	276 10 33.4
Bonn, ...	+50 43 45.0	— 5 36 36.02	—.2337502	275 50 59.7
Breslau, ...	+51 6 56.5	— 6 16 22.19	—.2613679	265 54 27.1
Brussels, ...	+50 51 10.7	— 5 25 41.29	—.2261723	278 34 40.7
Cambridge, (Eng.,)	+52 12 51.8	— 5 8 35.08	—.2142949	282 51 13.8
Cambridge, (Mass.,)	+42 22 48.1	— 0 23 41.54	—.0164530	354 4 36.9
Cape of Good Hope,	—33 56 3.2	— 6 22 8.09	—.2653711	264 27 58.7
Chicago, ...	+41 50 1.0	+ 0 42 14.26	+.0293317	10 33 33.9
Cincinnati, . . .	+39 6 26.5	+ 0 29 46.94	+.0206822	7 26 44.1
Christiania, . . .	+59 54 43.7	— 5 51 6.69	—.2438274	272 13 19.6
Clinton, ...	+43 3 16.5	— 0 6 35.08	—.0045727	358 21 13.8
Copenhagen, . . .	+55 41 13.6	— 5 58 31.05	—.2489703	270 22 14.3
Cracow, ...	+50 3 50.0	— 6 28 2.80	—.2694768	262 59 18.0
Dorpat, ...	+58 22 47.0	— 6 55 6.02	—.2882641	256 13 29.7
Dublin, ...	+53 23 13.0	— 4 42 50.39	—.1964165	289 17 24.1
Durham, ...	+54 46 6.4	— 5 1 52.64	—.2096370	284 31 50.4
Edinburgh, . . .	+55 57 23.2	— 4 55 29.34	—.2052007	286 7 39.9
Florence, ...	+43 46 40.8	— 5 53 15.12	—.2453139	271 41 13.2
Geneva, . . .	+46 11 58.8	— 5 32 49.24	—.2311344	276 47 41.4
Georgetown, . . .	+38 54 26.2	+ 0 0 6.20	+.0000718	0 1 33.0
Göttingen, . . .	+51 31 47.8	— 5 47 58.49	—.2416492	273 0 22.7
Gotha, ...	+50 56 37.5	— 5 51 3.39	—.2437892	272 14 9.2
Greenwich, . . .	+51 28 38.2	— 5 8 12.39	—.2140323	282 56 54.2
Hamburg, . . .	+53 33 7.0	— 5 48 5.95	—.2417355	272 58 30.8
Helsingfors . . .	+60 9 42.6	— 6 48 1.32	—.2833486	257 59 40.2
Hudson, ...	+41 14 42.6	+ 0 17 32.06	+.0121766	4 23 0.9
Kasan, ...	+55 47 24.2	— 8 24 41.14	—.3504761	233 49 42.9
Königsberg, . . .	+54 42 50.6	— 6 30 11.87	—.2709707	262 27 2.0
Kremsmünster, . .	+48 3 23.7	— 6 4 45.03	—.2532990	268 48 44.6
Leipsic, ...	+51 20 6.3	— 5 57 46.87	—.2484592	270 33 17.0
Leyden, ...	+52 9 20.3	— 5 26 8.57	—.2264881	278 27 51.5
Liverpool, . . .	+53 24 47.7	— 4 56 12.34	—.2056984	285 56 54.9
Madras, ...	+13 4 9.2	—10 29 9.67	—.4369175	202 42 35.0
Madrid, ...	+40 24 29.7	— 4 53 27.00	—.2037847	286 38 15.0
Mannheim, . . .	+49 29 12.9	— 5 42 3.06	—.2375354	274 29 14.1

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
Markree, ...	+54 10 31.8	— 4 34 24.00	—.1905556	291 24 0.0
Marseilles, . . .	+43 17 49.0	— 5 29 40.55	—.2289415	277 34 51.8
Milan, ...	+45 28 0.7	— 5 44 58.20	—.2395625	273 45 27.0
Modena, ...	+44 38 52.8	— 5 51 55.53	—.2443927	272 1 7.1
Moscow, ...	+55 45 19.8	— 7 38 29.29	—.3183946	245 22 40.7
Munich, ...	+48 8 45.0	— 5 54 38.00	—.2462731	271 20 30.0
Naples, ...	+40 51 46.6	— 6 5 10.95	—.2535990	268 42 15.8
New York, . . .	+40 43 48.5	— 0 12 15.47	—.0085124	356 56 8.0
Nicolajew, . . .	+46 58 20.6	— 7 16 6.53	—.3028534	250 58 22.1
Olmütz, ...	+49 35 43.0	— 6 17 15.43	—.2619841	265 41 8.6
Oxford, ...	+51 45 35.5	— 5 3 9.79	—.2105300	284 12 33.2
Padua, ...	+45 24 2.5	— 5 55 41.17	—.2470043	271 4 42.5
Palermo, ...	+38 6 44.0	— 6 1 37.00	—.2511227	269 35 45.0
Paramatta, . . .	—33 48 49.8	—15 12 18.64	—.6335491	131 55 20.4
Paris, ...	+48 50 11.0	— 5 17 33.02	—.2205211	280 36 44.7
Philadelphia, . . .	+39 57 7.5	— 0 7 33.64	—.0052505	358 6 35.4
Prague, ...	+50 5 18.5	— 6 5 53.52	—.2540917	268 31 37.2
Pulkowa, ...	+59 46 18.1	— 7 9 31.06	—.2982757	252 37 14.1
Rome, ...	+41 53 53.7	— 5 58 8.53	—.2487098	270 27 52.1
San Fernando, . .	+36 27 45.0	— 4 43 22.42	—.1967873	289 9 23.7
Santiago, ...	—33 26 42.0	— 0 25 30.00	—.0177083	353 37 30.0
Senftenberg, . . .	+50 5 10.1	— 6 14 3.00	—.2597570	266 29 15.0
Speyer, ...	+49 18 55.4	— 5 41 58.00	—.2374769	274 30 30.0
Stockholm, . . .	+59 20 33.8	— 6 20 26.35	—.2641939	264 53 24.7
St. Petersburg, . .	+59 56 29.7	— 7 9 25.87	—.2982161	252 38 32.0
Upsala, ...	+59 51 31.5	— 6 18 42.70	—.2629942	265 19 19.5
Utrecht, ...	+50 5 10.5	— 5 28 43.67	—.2282832	277 49 5.0
Vienna, ...	+48 12 35.5	— 6 13 44.09	—.2595381	266 33 58.7
Washington, . . .	+38 53 38.8	0 0 0.00	.0000000	0 0 0.0
Wilna, ...	+54 50 59.1	— 6 49 23.33	—.2842978	257 39 10.1

The authorities for these positions are given in the volumes for 1871 and 1872.

By a more recent telegraph determination, made by the *United States Coast Survey* in 1867, Cambridge, Mass., is East of Washington $0^h\,23^m\,41^s.08$, instead of $0^h\,23^m\,41^s.54$. The correction, therefore, to be applied to the longitudes of the preceding table, except those of Albany, Cincinnati, Georgetown, Hudson, New York, Philadelphia, and Washington, is $+0^s.46 = +0^d.0000053 = +6''.9$.

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

THIS Ephemeris is divided into two distinct parts. One part is designed for the special use of NAVIGATORS, and therefore adapted to the Meridian of Greenwich.

The other part is suited to the convenience of ASTRONOMERS, on this continent particularly, and adapted to the Meridian of Washington.

THE NAUTICAL PART.

THIS part contains the Ephemeris of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain Fixed Stars; the Ephemeris of the planets Venus, Mars, Jupiter, and Saturn; and the Mean Places of 198 principal Fixed Stars for the beginning of the year 1874.

Time.—Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time.—Sidereal Time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted. This point is the vernal equinox, and its hour angle is called the *Sidereal Time.* Astronomical clocks are regulated to sidereal time.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

The vernal equinox is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the sidereal time in common use might therefore be called *Apparent Sidereal Time;* and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2^s.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Solar Time.—Solar Time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun,* is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun;* the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it. The clocks in ordinary use, and chronometers used by Navigators, are regulated to *mean* time.

True or *Apparent Time* is measured by the motion of the real sun.

The difference between the *apparent* and *mean* time is called the *Equation of Time.* By means of it we pass from *apparent* to *mean* time, or the reverse. Thus, if the *apparent* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *apparent* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

Day.—The *civil day*, according to the customs of society, commences at midnight, and comprises twenty-four hours from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each; the first of which is marked A. M., the last is marked P. M.

The *astronomical day* commences at noon of the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical, as well as the civil, time may be either *apparent*, or *mean*, according as it is reckoned from *apparent* noon, or from *mean* noon.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day.* Thus, January 9th, 2^h A. M., *civil time*, is January 8th, 14^h, *astronomical time;* and January 9th, 2^h P. M., *civil time*, is also January 9th, 2^h, *astronomical time.* The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

If the longitude from Greenwich be expressed in time, and, when it is *west, added* to the local time, or, when it is *east, subtracted* from the local time, the result is the corresponding Greenwich time. If the local astronomical time is used, the result is the *Greenwich astronomical time*, which ordinarily is required for the use of this Part of the Ephemeris.

The Calendar.—The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:

Page I. contains the *Apparent Right Ascension and Declination* of the Sun and the *Equation of Time* for each Greenwich *apparent* noon. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of the quantity for a given *Greenwich apparent time.* The hourly differences are given for the instant of apparent noon at Greenwich, and, when great accuracy is required, should be first interpolated for *half* the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is 0. The longitude from Greenwich expressed in time, if *west*, is at that instant the Greenwich apparent time, or time *after* Greenwich apparent noon;—if *east*, it is time *before* Greenwich apparent noon. The longitude is therefore employed in reducing the quantities on this page to apparent noon at any place.

The Right Ascension of the sun thus reduced is the *Sidereal Time of Local Apparent Noon.* The difference between it and the clock time of the meridian passage of the sun is the error of the clock on *Sidereal* time.

The Declination of the sun reduced to the meridian, or apparent noon, of the place, is needed in finding the latitude from a meridian altitude of the sun.

As an example of the use of this page, let the sun's declination be required at noon of January 3d, 1874, in longitude 146° 4′ W., or $+9^h\,44^m\,16^s$. We first find—

	″	° ′ ″
For January 3d, at Greenwich *apparent* noon, ⊙'s declination		= 22 49 11.6 S.
The diff. for 1 hour, +14″.87, multiplied by 9, is	133.83	
The proportional part for $30^m = \frac{1}{2}^h$,	7.44	
" " " $12^m = \frac{1}{5}^h$,	2.97	
" " " $2^m = \frac{1}{30}^h$,	.50	
" " " $15^s = \frac{1}{8}$ of 2^m,	.06	
The sum to be subtracted,	144.80 or	2 24.8 N.
The sun's declination required,		22 46 46.8 S.

The longitude $9^h\,44^m\,16^s = 9^h\,44^m.27 = 9^h.738$; and 14″.87 × 9.738 = 144″.80 = 2′ 24″.80; which is also the reduction obtained in another way.

If the longitude is 146° 4′ E., the reduction, 2′ 24″.8, should be added, and the resulting declination becomes 22° 51′ 36″.4 S.

If greater precision is required, the hourly difference may be first interpolated for $4^h\,52^m$ (or half the longitude) *after* noon for the *west* longitude, or for $4^h\,52^m$ *before* noon for the *east* longitude. This will give, in the first case, the hourly difference 15″.10, and the resulting declination 22° 46′ 44″.6 S.; and, in the second case, the hourly difference 14″.64, and the declination 22° 51′ 34″.2 S.

At sea, however, it is ordinarily sufficient to have the declination to the nearest half minute; and the reduction may be found by Table V. of BOWDITCH's *American Practical Navigator.*

The *Equation of Time*, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent* time, or the time given by an observation of the sun, to obtain the *mean* time. The heading of the column directs the manner in which the equation is to be applied. Where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. As given on page I. the equation of time is also the *mean* time of *apparent* noon.

On page I. are also given the *Sun's Semidiameter*, which is used in reducing the altitude of a limb of the sun, or the angular distance of the limb from the moon or some other object, to the altitude, or distance, of the centre of the sun; and the *Sidereal Time of the Semidiameter passing the Meridian*, which is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the *first*, or western, limb, to be subtracted from the time of transit of the *second*, or eastern, limb.

Page II. contains for each Greenwich *mean* noon the *Apparent Right Ascension* and *Declination of the Sun*, the *Equation of Time*, and the *Sidereal Time of Mean Noon.* The hourly changes of these quantities are also given for noon, and may be used in reducing them to any given Greenwich *mean* time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required.

The Right Ascension and Declination on pages I. and II. are affected by ***Aberration***, and therefore denote the *apparent* position of the *true* sun. Page II. is more conveniently used when the *mean* time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to *mean* time. The quantities can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the local time from observations of the sun, and the latitude from other than meridian observations. The heading of the column directs the manner in which it is to be applied to *mean* time to obtain the *apparent* time.

As given on page II., the equation when ***additive*** is the apparent time of mean noon; and in general it is the hour angle of the *true* sun at the instant of *mean* noon.

The *Sidereal Time of Mean Noon* is also the ***Right Ascension of the Mean Sun.*** It may be reduced for the longitude, or to any Greenwich *mean* time, by using the hourly difference, $9^{s}.8565$; or by Table III. in the appendix of the *American Ephemeris* for *reducing intervals of mean solar to sidereal time.* Table LI. of Bowditch's *Navigator* may be used for the same purpose when the nearest quarter of a second only is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting solar time to sidereal time. If we add the right ascension of the *true* sun to the *apparent* time, or the right ascension of the *mean* sun to the *mean* time, the result will be the *sidereal* time.

The sidereal time of mean noon reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a *sidereal interval to a mean time interval* in Table II. of the *American Ephemeris*, or Table LII. of Bowditch's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^{s}.8296$ by the hours and parts of an hour of the given *sidereal* time.

As examples of the use of page II. :—

1. Let the sun's right ascension and the equation of time be required for 1874, Feb. 3, $6^{h}\ 12^{m}\ 13^{s}$ A. M. mean time at a place whose longitude is 118° 14′ E.

		h	m	s
The local astronomical *mean* time is	Feb. 2,	18	12	13
The longitude in time,	—	7	52	56
The Greenwich *mean* time,	Feb. 2,	10	19	17
	or Feb. 2,	10.3214		

	Sun's R. A.				*Equation of time.*		
	h	m	s		m	s	
Feb. 2, *Noon*,	21	4	1.40	Feb. 2, *Noon*,	13	59.55	*Subtractive.*
H. D. $10^{s}.143 \times 10.3214$	+	1	44.69	H. D. $+0^{s}.287 \times 10.3214 =$	+	2.96	
	21	5	46.09		14	2.51	

If greater precision is required, the hourly differences interpolated to $5^{h}.2$, or $10^{s}.135$ for the right ascension, and $0^{s}.279$ for the equation of time, should be used.

The equation of time in this example is ***subtractive from*** mean time. Its reduction could have been found by Table VI. A. of Bowditch's *Navigator* to seconds only.

2. If the sidereal time is required for the same date and time, we have—

	h	m	s
Feb. 2, *Noon*, the R. A. of the mean sun is	20	50	1.85
Add the H. D. $9^{s}.8565 \times 10.3214$, or	+	1	41.73
Add the local ***astronomical*** mean time	18	12	13.00
The required sidereal time is, (rejecting 24^{h},)	15	3	56.58

The reduction $1^{m}\ 41^{s}.73$ could have been found in Table III. corresponding to the Greenwich mean time, $10^{h}\ 19^{m}\ 17^{s}$. By Table LI. of Bowditch's *Navigator*, the reduction is $1^{m}\ 41^{s}.7$.

3. 1874, Feb. 3, A. M., at a place whose longitude is 118° 14′ E., suppose the sidereal time to be $15^h\,3^m\,56^s.58$, and that the corresponding mean time is required.

The astronomical day is Feb. 2; the longitude in time $-7^h\,52^m\,56^s$, or $-7^h.882$.

		h	m	s	
Feb. 2, the sidereal time of Greenwich mean noon is		20	50	1.85	
The H. D. $9^s.8565 \times (-7.882)$, or the red. for $7^h\,52^m\,56^s$ in Table III.		—	1	17.69	
The sidereal time of local noon,		20	48	44.16	
The given sidereal time $+24^h$,		39	3	56.58	
Subtracting the first from the second gives the *sidereal interval* from noon		18	15	12.42	$=18^h.254$
$-9^s.8296 \times 18.254$, or the red. for $18^h\,15^m\,12^s$ in Table II.,		—	2	59.42	
The required astronomical mean time,	Feb. 2,	18	12	13.00	

Page III. contains the *Longitude* and *Latitude of the Sun*, and the *Logarithm of its Distance from the Earth*, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ' the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The longitudes of the sun are the true longitudes, not affected by aberration. The latitude is referred to the ecliptic of the date.

The last column on page III. contains the *Mean Time of Sidereal* 0^h, or 24^h—the right ascension of the mean sun. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich *sidereal* time by means of the hourly difference,—$9^s.8296$. The reduction, however, can be taken directly from Table II. of the American Ephemeris, for *reducing intervals of sidereal time to mean solar time*, or approximately, from Table LII. of Bowditch's *Navigator*.

This column is used in converting sidereal time to mean time. As an illustration let us take Example 3, above.

		h	m	s	
Feb. 2, the mean time of Greenwich sidereal 0^h is		3	9	27.01	
The H. D. $-9^s.8296 \times (-7.882)$, or the red. for long., Table II.,		+	1	17,48	
The mean time of local sid. 0^h,		3	10	44.49	
Add the given sidereal time,		15	3	56.58	$=15^h.066$
The sum is		18	14	41.07	
$-9^s.8296 \times 15.066$, or the red. for $15^h\,3^m\,57^s$ in Table II.,		—	2	28.09	
The required astronomical mean time,	Feb. 2,	18	12	12.98	

It was readily seen in advance that the sum of the mean time of sidereal 0^h and the given sidereal time would be less than 24^h. Were it more than 24^h, the mean time of sidereal 0^h should be taken out for Feb. 1, that is the *preceding* astronomical day.

Page IV. contains the *Moon's Semidiameter* and *Equatorial Horizontal Parallax* for every mean noon and midnight at Greenwich. Columns adjoining those of the Horizontal Parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time in the same way as the sun's declination and the equation of time in the preceding examples. The sign *plus* or *minus* (+ or —) prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.273. It also may be obtained from Table XI. of Bowditch's *Navigator*, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1874, Jan. 15, 9^h P. M. Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of Jan. 15 is $6''.7$; then

$$\text{as } 12^h : 9^h = 6''.7 : 5''.0$$

which is the correction to be *added to* the semidiameter at noon, because the semidiameter is *increasing*. The moon's semidiameter then, for Jan. 15, 9^h, is $15'\,40''.2 + 5''.0$, or $15'\,45''.2$.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for *half* the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Meridian Passage* at Greenwich, which is given on page IV. to minutes and tenths of minutes, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. The reduction may be taken from BOWDITCH'S Table XXVIII. by simple inspection. The last column of this page contains the *Age* of the Moon, or the time elapsed since the preceding new moon, to tenths of days.

Pages V. to XII., inclusive, contain the *Moon's Right Ascension* and *Declination* for each day and hour of Greenwich *mean* time. They are accompanied with columns of *differences for one minute*, which are also given at each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. The Greenwich mean time, which is required for taking out these quantities, may be taken directly from a well-regulated chronometer, or obtained by applying the longitude, turned into time, to the local mean time of the observer. Each is taken out for the day and hour of the Greenwich *mean* time; the *diff. for* 1^m multiplied by the *minutes* and parts of a minute of the Greenwich time; and the product added to, or subtracted from, the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1874, Jan. 7, 15^h 15^m 20^s, astronomical mean time at Greenwich;

	Right Ascension.		*Declination*
	h m s		° ′ ″
Jan. 7, 15^h	11 24 3.28		8 20 12.2 N.
Diff. 1^s.7953 × 15.333	= + 27.53	13″.108 × 15.333	= 3 21.0 S.
Jan. 7, 15^h 15^m 20^s	11 24 30.81		8 16 51.2 N.

The differences interpolated for 7^m.67 = 0^h.13 are for the right ascension 1^s.7950, and for the declination 13″.111, which may be used for greater precision.

Page XII. contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII. to XVIII., inclusive, contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, the four larger planets, and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore *astronomical*. All the distances that can be observed on the same day are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W., or E., is affixed to the name of the sun, planet, or star, to indicate that it is on the west, or east, side of the moon.

An observer on the earth's surface having measured a *Lunar Distance*, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the *true*, or *geocentric*, distance. With this distance and the distances in the Ephemeris of the same bodies on the same day, the *Greenwich mean time* of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris between every two successive distances the *logarithm of the seconds of time in which the distance changes* 1″; or, as it is usually called, the *proportional logarithm of the difference.* It is given for the *middle* instant of the two hours between which it is placed.

For computing the *Greenwich time* we have the following rule:

Find in the Almanac the two distances between which the true distance falls; take out the nearest of these, the hours of Greenwich time over it, and the *P. L. of Diff.* between them:

Find the difference between the true distance and the distance taken from the Almanac; and from the *proportional logarithm* of this difference subtract the *P. L. of Diff.* taken from the Almanac:

The result is the *proportional logarithm* of an interval of time to be *added* to the hours of Greenwich time, taken from the Almanac, when the *earlier* Almanac distance is used; to be *subtracted* from the hours of Greenwich time, when the *later* Almanac distance is used.

Or, we may *add* the *common logarithm* of the difference of the true and the Almanac distances to the *P. L. of Diff.* of the Almanac; and the sum will be the *common logarithm* of the correction to be applied to the hours of Greenwich time. The Table of *Logarithms of small Arcs in Space or Time,* given at the end of the volume for 1871, saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the *P. L. of Diff.* in the Ephemeris varies, the Greenwich time, found by the methods just described, may not be sufficiently exact. To correct it for such variation, or *2d difference,* take the difference between the *P. L. of Diff.* used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones.) With this difference, and the first correction of the Greenwich time already found, enter Table I. Appendix, and take out the corresponding seconds, which are to be *added* to the approximate Greenwich time if the *Prop. Logs.* in the Ephemeris are *decreasing;* to be *subtracted* if they are *increasing.*.

Thus the *Greenwich mean time* of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer time and the Greenwich mean time will be the *error* of the chronometer as found from the Lunar Distance. The agreement or disagreement of this error with that brought up from the error and rate of a previous date, may show whether the chronometer has run well or ill. In this way Lunar Distances can be used as a check upon the chronometer. By a series of carefully observed Lunar Distances on both sides of the moon, the chronometer error can be tolerably well ascertained.

If the observer has found the *local mean time* of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the Lunar Distance will be his longitude.

As an example of finding the Greenwich mean time from a Lunar Distance, suppose that in 1874, Jan. 6, about 5^h of Greenwich astronomical time, the corrected distance of the moon's centre from *a* Scorpii (*Antares*) is 96° 32′ 25″:

		° ′ ″		
Corrected distance,		96 32 25		
Distance in the Ephemeris, Jan. 6, $3^h\ 0^m\ 0^s$,		97 51 58	P. L.	.2986
Difference,		1 19 33	P. L.	.3546
Time from 3^h (*after*)	+ 2 38 14		P. L.	.0560
Corr. for 2d Diff., Table I,	− 1		Diff. of P. Logs.	+ 8
Greenwich Mean Time, Jan. 6,	5 38 13			

By a Table of common logarithms, or a Table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:

P. L. from Ephemeris,			0.2986
Diff. of distances,	1° 19′ 33″ = 4773″	log	3.6788
Red. of Greenwich time,	$+2^h\ 38^m\ 13^s = 9493^s$	log	3.9774

the result being nearly the same as by the previous method.

Pages 218 to 241, inclusive, contain the Ephemerides of the four principal planets, Venus, Mars, Jupiter, and Saturn. The Ephemeris of each consists of its *apparent right ascension* and *declination*, and their *variations in one hour*, for each Greenwich mean noon; the *mean time of meridian passage;* and, at the bottom of the page, the *semidiameter* and *horizontal parallax.*

North declinations are marked +, south declinations —. + prefixed to the hourly change of declination of the sun, moon, or a planet, indicates that north declinations are increasing, and south declinations are decreasing; — indicates that north declinations are decreasing, south declinations increasing.

The right ascension and declination are needed in all observations of the planet for time, latitude, or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples of the sun previously given. The mean time of passage across any meridian can be found by dividing the *daily* difference by 24, and using the *hourly* difference thus obtained, as in the case of the moon; or, the reduction can be found by the proportion: As 24^h (or 360°) is to the longitude, so is the daily difference to the reduction required.

Pages 242 to 244 contain the SUN's *Rectangular* Coördinates referred to the equator and equinox of the date. They were employed in computing the Ephemeris of the Planets. The day of the year, or number of days from January 0, is also given.

Pages 245 to 248 contain the MOON's *true Longitude and Latitude* for each Greenwich mean noon and midnight. The right ascensions and declinations of the moon have been computed from them.

Pages 261 to 264 contain the *Mean Places*, with their *annual variations*, of one hundred and ninety-eight Fixed Stars for the beginning of the year 1874. North declinations are marked +; south declinations —.

The right ascension of a star is also the *sidereal time* of its meridian passage. From this we may roughly find the mean time of meridian passage by adding the *mean time of sidereal* 0^h on page III. of the Calendar, or subtracting the *sidereal time of mean noon* on page II., (disregarding seconds;) but we can find it more exactly by the processes already given for converting sidereal time to mean time.

The right ascension and declination of a star are generally needed in observations of it for time, latitude, or azimuth. The mean places are sufficiently accurate for most observations at sea; but for more exact observations, the *apparent* places given in the larger Ephemeris should be used.

THE ASTRONOMICAL PART.

This part is adapted to the meridian of Washington; and Washington time, *astronomical* or *sidereal*, is required in its use. The longitude of Washington from Greenwich is assumed to be $+5^h\ 8^m\ 12^s$.

Obliquity of the Ecliptic, &c., page 250.—This page contains for every ten days of the year the *Apparent Obliquity*, which is required for the transformation of longitudes and latitudes to right ascensions and declinations, or the reverse; the *Equation of Equinoxes* in longitude and right ascension, or the reduction from the *mean* to the *true* equinox of the date; the *Precession of Equinoxes* in longitude, or the reduction of longitudes from the mean equinox of the *beginning* of the year to the mean equinox of the *date;* the *Sun's Aberration*, which is to be applied to the *true* longitude of the sun, as given in the Ephemeris, to obtain its *apparent* longitude; the *Sun's Horizontal Parallax;* and the *Mean Longitude of the Moon's Ascending Node.*

At the bottom of the page are given the *Mean Obliquity* for the beginning of the year; the *Annual Precession* for the middle of the year, the precession in a sidereal and in a solar day, and the *daily motion* of the moon's node in longitude.

Fixed Stars.—Pages 251–259 contain for each mean midnight the logarithms of A, B, C, D, also f, G, H, i, and logarithms of g, h, and i, (following BESSEL's notation), for reducing the *mean* places of the Fixed Stars at the beginning of the year to their *apparent* places on any day.

The formulæ from which they are derived, and those in which they are used, are given on page 260. The coefficients are those of PETERS and STRUVE. For terms in right ascension, except the small terms at bottom of page 260, they are expressed in time.

The first set of quantities require for the star the logarithms of a, b, c, d, a', b', c', d', which are to be found in the Star Catalogues. The other set require no other star constants than the right ascensions and declinations. f, G, and H are given in time, as well as arc, to facilitate their use with tables of sines, &c., which have the argument in time.

Tables V. and VIII., in the Appendix, give corrections of the apparent places of several circumpolar stars, and of the quantities A and B for small terms of nutation.

Tables IV., VI. and VII. facilitate the computation of terms depending on 2☾ and $\text{☾} - l'$.

For a star near the pole, it is best to compute the reductions with the time constants and the mean right ascension and declination at the date, instead of the beginning of the year, (or the logarithms of *a*, *b*, *c*, &c., reduced to the date), and add such of the following terms as may be of sufficient magnitude:

In *Right Ascension*.

$$\left.\begin{array}{l} +0^s.000003\ \tau^2 \sin a \\ -0^s.000149\ \tau^2 \cos a \end{array}\right\} \tan\delta$$

$$\left.\begin{array}{l} -0^s.0000650\ \tau^2 \sin 2a \\ +0^s.0000103 \sin 2\,\text{☊} \cos 2a \\ -0^s.0000107 \cos 2\,\text{☊} \sin 2a \end{array}\right\} \tan^2\delta$$

$$\left.\begin{array}{l} +0^s.0000620 \sin 2\odot \cos 2a \\ -0^s.0000622 \cos 2\odot \sin 2a \end{array}\right\} \sec^2\delta$$

$$\left.\begin{array}{l} +0^s.0000513 \sin(\odot + \text{☊}) \cos 2a \\ -0^s.0000507 \cos(\odot + \text{☊}) \sin 2a \\ +0^s.0000097 \sin(\odot - \text{☊}) \cos 2a \\ -0^s.0000053 \cos(\odot - \text{☊}) \sin 2a \end{array}\right\} \tan\delta \sec\delta$$

In *Declination*.

$$\left.\begin{array}{l} +0''.000975\ \tau^2 \sin^2 a \\ -0''.000023 \cos 2\,\text{☊} \\ -0''.000080 \cos 2\,\text{☊} \cos 2a \\ -0''.000077 \sin 2\,\text{☊} \sin 2a \\ +0''.000040 \cos 2\odot \\ -0''.000467 \cos 2\odot \cos 2a \\ -0''.000465 \sin 2\odot \sin 2a \end{array}\right\} \tan\delta$$

$$\left.\begin{array}{l} -0''.00004 \cos(\odot + \text{☊}) \\ -0''.00038 \cos(\odot + \text{☊}) \cos 2a \\ -0''.00038 \sin(\odot + \text{☊}) \sin 2a \\ -0''.00038 \cos(\odot - \text{☊}) \\ -0''.00004 \cos(\odot - \text{☊}) \cos 2a \\ -0''.00007 \sin(\odot - \text{☊}) \sin 2a \end{array}\right\} \sin\delta \tan\delta$$

Pages 261–264 contain the *mean places* and *annual variations* of 198 Fixed Stars for 1874, Jan. 0^d—.195, or the instant when the sun's mean longitude is 280°. τ on the preceding pages is reckoned from the same epoch. Stars within 25° of either pole are designated by a *.

The *apparent* places of α, δ, and λ Ursæ Minoris, and of 51 Cephei, are given on pages 265–276 for every upper transit at Washington. They include the terms depending on 2☾, as well as other small terms on pages 260 and 497, so far as they were of sufficient importance.

The *apparent* places of the remaining 194 stars follow on pages 277–325 in the order of their right ascensions. They are given for every tenth transit, together with *ten times* their *daily* motion at transit; and include all terms of the preceding formulæ exceeding $0^{s}.003$ in right ascension, or $0''.03$ in declination, except those which depend on 2☾ and ☾ — l'. The mean solar time of transit is also given to the nearest tenth of a day.

Solar Ephemeris.—Pages 326–331 contain the *Apparent Right Ascension* and *Declination* of the SUN for each mean and apparent noon at Washington; the *Hourly Motion* at mean noon; the *Equation of Time* at apparent noon with the sign of its application to apparent time; the SUN's *Semidiameter* and the *Sidereal Time of its passing the Meridian;* and the *Sidereal Time of Mean Noon.* The explanation of these quantities and their use has already been given on pages 490–492.

The SUN's *Horizontal Parallax* is on page 250.

Moon Culminations.—Pages 332–334 contain the mean solar time of the *Upper Transit* of the MOON's *centre* at Washington, expressed to hundredths of a minute, the *difference* for *one hour* of longitude, and the *Sidereal Time of Semidiameter passing the Meridian*, both given for the instant of transit at Washington. The numbers in the fifth column indicate the four STARS in the list of *Moon Culminating Stars*, pages 335–338, the two preceding and the two next following the moon, proper to be observed with the moon at each transit. The *bright Limb* of the *Moon* is indicated by the Roman numerals in the last column.

The time of transit at any place, within six hours of Washington in longitude, may be found with sufficient accuracy from the time of the Washington transit by using the hourly difference interpolated for a longitude *half* that of the given place. With this time, reduced to Greenwich time, the moon's right ascension can be taken from the Lunar Ephemeris, pages V–XII of each month, as in the example on page 494. If greater precision is required, or the place is more than six hours from Washington, we may from the right ascension thus obtained, which is nearly the *local sidereal time*, find the *local mean time* (as on page 493) more accurately than before, and thence the *Greenwich mean time*, and with this revise the computation.

As an example, suppose the right ascension of the bright limb of the moon to be required at the transit of January 28, 1874, at San Francisco, in longitude

$3^{h}\ 1^{m}\ 12^{s}=3^{h}.0200=0^{d}.1258$ West of Washington.
8 9 24 " Greenwich.

		h	m
Transit at Washington, (p. 332)	Jan. 28,	9	25.56
Corr. for longitude	$3.0200\times 2^{m}.355 =$	+	7.11
Transit at San Francisco,	Jan. 28,	9	32.67
Longitude from Greenwich,		8	9.40
Greenwich mean time,	Jan. 28,	17	42.07

		h	m	s
Moon's R.A., Jan. 28, $18^{h}\ 0^{m}$		6	6	37.24
Diff. for — 17.93	$17.93\times 2^{s}.4304 =$		—	43.58
Moon's R.A., Jan. 28, 17 42.07		6	5	53.66
Sid. time of semidiameter passing,		—	1	12.49
R. A. of I, or bright limb,		6	4	41.17

The approximate Declination is +27° 19′.

The diff. for 1^{h} of long., $2^{m}.355$, is found by interpolating *forward* $0^{d}.063$ from that given on page 332; and $2^{s}.4304$, the change of R. A. in 1^{m}, by interpolating *back* 9^{m} from that given on page 12 for

Jan. 28, 18^h. The time of semidiameter passing the meridian is interpolated forward $0^d.126$ from that given on page 332, and is subtracted from the right ascension of the centre, since the bright limb is I., or the preceding one.

The Greenwich mean time computed from the right ascension of the moon's centre agrees with that stated above.

Moon Culminating Stars, pages 335–338.—The *mean* places, with their annual variations, of 174 stars near the moon's path are given for the beginning of the fictitious year (1874, Jan. 0^d—.195). The names of 35 of them, whose *apparent* places are given in the Ephemeris of the *Fixed Stars*, are printed in SMALL CAPITALS.

The *apparent* places of the others may be obtained by the quantities and formulæ on pages 251–260. To illustrate the use of these, suppose the apparent place of No. 33, ζ Tauri, one of the four stars proper to be observed with the moon on January 28, be required at its transit of that date at San Francisco.

The Washington mean time of the transit at San Francisco is January 28, $12^h.6 = 0^d.03$ after midnight of January 28. The quantities from page 251, or page 254, are to be taken out for this time.

1st *Method.*

(Star Tables)	log a	0.554	log b	7.523	log c	7.978	log d	8.8502
(p. 251)	log $\mathcal{A}$	9.056 n	log B	0.838 n	log C	1.073 n	log D	1.2001
(Star Tables)	log a'	0.416	log b'	9.996 n	log c'	8.687	log d'	8.670
	log $\mathcal{A}a$	9.610 n	log Bb	8.361 n	log Cc	9.051 n	log Dd	0.0503
	log $\mathcal{A}a'$	9.472 n	log Bb'	0.834	log Cc'	9.760 n	log Dd'	9.870

(p. 335) $\alpha =$	$5^h\ 30^m\ 7^s.01$	$\delta =$	$+21°\ 3'\ 49''.1$
$\mathcal{A}a =$	$-\ 0.407$	$\mathcal{A}a' =$	-0.30
$Bb =$	$-\ 0.023$	$Bb' =$	$+6.82$
$Cc =$	$-\ 0.112$	$Cc' =$	-0.57
$Dd =$	$+\ 1.122$	$Dd' =$	$+0.74$
$E =$	$-\ 0.002$	$\mu' = -0''.02$ $\tau\mu' =$	0.00
$\mu = +0^s.005$ $\tau\mu =$	0.000		
Apparent Place, $\alpha' =$	$5\ 30\ 7.59$	$\delta' =$	$+21\ 3\ 55.8$

2d *Method.*

(p. 335) $\alpha = 5^h\ 30^m.1$ $\delta = +21°\ 3'.8$

(p. 254) $G = 16\ 46.6$ $G + \alpha = 22^h\ 16^m.7 = 334°\ 10'$

" $H = 21\ 32.9$ $H + \alpha = 3\ 3.0 = 45\ 45$

log $\frac{1}{15}$	8.8239	log $\frac{1}{15}$	8.8239	$\alpha =$	$5^h\ 30^m\ 7^s.01$
log g	0.8603	log h	1.2964	$f =$	$-\ 0.350$
l. sin $(G+\alpha)$	9.6392 n	l. sin $(H+\alpha)$	9.8551	$(g) =$	$-\ 0.081$
l. tan δ	9.5857	l. sec δ	0.0300	$(h) =$	$+\ 1.013$
log (g)	8.9091 n	log (h)	0.0054	$\tau\mu =$	0.000
Apparent Right Ascension				$\alpha' =$	5 30 7.59
log g	0.8603	log h	1.2964		
l. cos $(G+\alpha)$	9.9543	l. cos $(H+\alpha)$	9.8437	$\delta =$	$+21°\ 3'\ 49''.1$
log (g')	0.8146	l. sin δ	9.5556	$(g') =$	$+\ 6.52$
log i	$\overline{0.7109}$ n	log (h')	0.6957	$(h') =$	$+\ 4.96$
l. cos δ	9.9699			$(i) =$	$-\ 4.79$
log (i)	0.6808 n			$\tau\mu' =$	0.00
Apparent Declination				$\delta' =$	$+21\ 3\ 55.8$

The MOON'S *Semidiameter* and *Equatorial Horizontal Parallax* for each mean noon and midnight are on pages 339–342.* In the moon's Ephemeris, as in that of the sun, the hourly motions belong to the instants for which they are given. The hourly change of semidiameter is equal to .2723 times that of the horizontal parallax.

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*For eclipses and occultations, BURCKHARDT'S value of the semidiameter, which is $2''.5$ less, is preferred.

The times of the *Moon's Phases*, *Apogee*, *Perigee*, and *greatest Libration*, are given on page 343; and the position of the *Moon's Equator* and the *Moon's mean longitude* on page 344; and a Table for computing the *Libration* of the Moon on page 345.

The *Ephemerides of the seven principal Planets* (pages 346–387) are given both for *mean noon* and the time of *transit*. The *hourly differences* are also given for the same instants. Third differences were used in their computation.

The *Horizontal Parallaxes*, *Vertical Semidiameters and Sidereal Times of the Semidiameters passing the Meridian* are on pages 388 and 389.

The *Sun's Coördinates* (pages 390–401) are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator at the beginning of the year (Jan. $0^d.0$). In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:). The latitude is referred to the ecliptic of the date. The reduction to the mean ecliptic of Jan. 0. is $+0''.488\ \tau \sin(\odot + 187^\circ)$, in which τ is the time from Jan. 0, in parts of a year.

The *Heliocentric Coördinates* of the Planets (pages 402–408) are referred to the mean equinox and ecliptic of the mean noon of the 2405,000th day of the Julian Period, or 1872, July 25.

The columns $-\frac{k^2}{r^3}x$, &c., contain the quantities $-1600\,m\frac{k^2}{r^3}x$, $-1600\,m\frac{k^2}{r^3}y$, $-1600\,m\frac{k^2}{r^3}z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Page 409 contains the *Inclinations and Longitudes of the Ascending Nodes* at the same epoch, and the *Masses* of the several Planets with their logarithms. The changes of the Inclinations and Nodes in 100 days include the motions of the ecliptic and equinox.

The Heliocentric Coördinates and Masses of the Planets are given for the computation of perturbations.

Eclipses.—Pages 410–416 contain the elements necessary for computation and the principal phases of each eclipse of the SUN and MOON. The semidiameters of the moon are $2''.5$, and those of the sun $2''.2$, less than those in the Ephemeris.

The charts of the *Solar Eclipses* show the part of the world in which each is visible. The dotted curves pass through places, where the eclipse begins, or ends, at an exact hour of Washington mean time, and aid in finding an approximate time of the beginning, or end, at any place. The limits and central line will give some idea of the magnitude of the eclipse. The longitudes are reckoned west from Washington.

The Tables of *Data of the Solar Eclipses* contain certain quantities* derived from the elements and independent of the place of observation. They are given for successive times at the Washington meridian; and if their values for the *Penumbra* be taken out for a time T_0, assumed near that of the beginning, or end, of the eclipse at any place, the prediction for that place may be computed quite accurately by the following formulæ:

Let φ = the latitude of the place, + when north,
λ = its longitude from Washington, + when west,

(*Bessel.*) $\log e = 8.912205$, $\log(1-e^2) = 9.9970916$, $\sin\chi = e\sin\varphi$,

$$h = \sec\chi\cos\varphi, \qquad k = (1-e^2)\sec\chi\sin\varphi,$$

$$a = A - h\sin(\mu-\lambda),$$

$$b = B - Ek + Gh\cos(\mu-\lambda),$$

$$c = -C + Fk - Hh\cos(\mu-\lambda),$$

$$m = \sqrt{bc}$$ (usually with same sign as a).

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*The formulæ are given in CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I, page 513. The changes of A, B, and C for *one minute*, or *one second*, are expressed in units of the sixth decimal place.

If $m=a$, the time T_0 is correctly chosen. If m differ from a, a correction t of the assumed time may be obtained in seconds by the formulæ,

$$\log \mu' = 1.86167, \qquad a' = A' - \mu' h \cos(\mu - \lambda),$$
$$\tan \tfrac{1}{2} Q = \frac{c}{m} = \frac{m}{b} \qquad b' = B' - \mu' G h \sin(\mu - \lambda),$$
$$t = -\frac{1000000\,(m-a)}{a' + b' \cot Q}$$

and a new approximation to the actual Washington time will be

$$T_0' = T_0 + t,$$

with which the computation may be revised.

Thus successive approximations are made until for the last assumed time T_0, $m = a$ very closely, and t is quite small. The local mean time of the phenomenon will be, using the last values of T_0 and t,

$$T_0 + t - \lambda.$$

Q must be taken of the same sign with a, and is a sufficiently near approximation to the angular distance of the point of contact reckoned from the *north* point of the sun's limb, + towards the *east.*

For a total or annular eclipse, the prediction of the interior contacts may be made in the same way, using the *Data* for the *Shadow;* except that Q will have a sign opposite that of a in a total eclipse.

To find V, the angular distance of the point of contact from the *Vertex* of the sun's limb, + towards the *left*, we have the formulæ

$$p \sin P = \sin \varphi \qquad c \sin C = \cos P \tan(\mu - \lambda)$$
$$p \cos P = \cos \varphi \cos(\mu - \lambda) \qquad c \cos C = \sin(P - \delta')$$
$$V = Q - C,$$

in which δ' is the sun's declination.

If the values of Q at the beginning and at the end of the eclipse be found, and their difference (with regard to signs) be denoted by $2\,\theta$, the number of digits eclipsed is

$$12\,(1+n) \sin^2 \tfrac{1}{2}\,\theta, \qquad \text{or } 12\,(1+n) \cos^2 \tfrac{1}{2}\,\theta,$$

according as θ is acute or obtuse: n being the quotient of the semidiameter of the moon divided by that of the sun.

θ may also be found from the formulæ:

$$\tan R = \frac{b'}{a'} \qquad \theta = Q + R$$

(in which R has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \,.\, \frac{m-a}{a'} \,.\, \frac{\sin Q \cos R}{\sin \theta}.$$

The following is an example of the computation of the beginning of the Eclipse of October 9, 1874, for the Observatory at Pulkowa, for which

$\varphi = +59^\circ\ 46'\ 18''.1 \qquad \lambda = 252^\circ\ 37'\ 14''.1$

(1) $\log e = 8.912205$

(2) $\text{l.} \sin \varphi = 9.9365269$ (1) + (2) $\text{l.} \sin \chi = 8.848732$

(3) $\log(1 - e^2) = 9.9970916$

(4) $\text{l.} \sec \chi = 0.0010847$ (2) + (3) + (4) $\log k = 9.9347032$

(5) $\text{l.} \cos \varphi = 9.7019536$ (4) + (5) $\log h = 9.7030383$

By the chart, the Washington mean time of the beginning of the eclipse at Pulkowa is $16^h\ 4^m$.

A nearer approximation is $16^h\ 3^m.7$, for which we take from the table for *Penumbra*, on page 414, the values of A, B, C, &c.

Computation of t, the correction of T_0.

$\mu = 244^\circ\ 9'\ 28''.5$

$\mu - \lambda = 351\ 32\ 14.4$

(1) $\text{l. sin}\ (\mu - \lambda) = 9.1678043\,n$
(2) $\log h = 9.7030383$
(3) $\text{l. cos}\ (\mu - \lambda) = 9.9952454$

(4) = (1) + (2) $\log h \sin (\mu - \lambda) = 8.870843\,n$
(5) $\log \mu' = 1.86167$
(6) $\log G = 9.080675\,n$
(7) = (2) + (3) $\log h \cos (\mu - \lambda) = 9.698284$
(8) $\log H = 9.045721\,n$

(6) + (7) $\log G h \cos (\mu - \lambda) = 8.778959\,n$
(7) + (8) $\log H h \cos (\mu - \lambda) = 8.744005\,n$

(5) + (7) $\log \mu' h \cos (\mu - \lambda) = 1.55995$
(4) + (5) + (6) $\log \mu' G h \sin (\mu - \lambda) = 9.81319$

(20) $\log b = 0.004674$
(21) $\log c = 9.102708$
(22) = $\frac{1}{2}$ [(20) + (21)] $\log m = 9.553691\,n$
(22) — (20) = (21) — (22) $\text{l. tan}\ \frac{1}{2} Q = 9.549017\,n$
Angle from N. point, $Q = -38^\circ\ 59'.3$

(29) $\text{l. cot.}\ Q = 0.09181\,n$
(30) $\log b' = 1.82556\,n$
(29) + (30) $\log b' \cot Q = 1.91737$

(31) $\log (m - a) + 6 = 1.3010\,n$
(32) $\log (a' + b' \cot Q) = 2.2302$
(31) — (32) $\log t = 9.0708\,n$

(9) $\log E = 9.996833$
(10) $\log k = 9.934703$
(11) $\log F = 9.997307$
(9) + (10) $\log E k = 9.931536$
(10) + (11) $\log F k = 9.932010$

(12) $A = -0.43209$
(13) $-k \sin (\mu - \lambda) = +0.07427$

(14) $B = +1.92508$
(15) $E k = -0.85415$
(16) $G h \cos (\mu - \lambda) = -0.06011$

(17) $-C = -0.78383$
(18) $F k = +0.85509$
(19) $-H h \cos (\mu - \lambda) = +0.05546$

(12) + (13) $a = -0.35782$
(14) + (15) + (16) $b = +1.01082$
(17) + (18) + (19) $c = +0.12668$
$m = -0.35784$
$m - a = -0.00002$

(23) $A' = +\ 123.52$
(24) $-\mu' h \cos (\mu - \lambda) = -\ 36.30$
(25) $B' = -\ 66.27$
(26) $-\mu' G h \sin (\mu - \lambda) = -\ 0.65$

(25) + (26) $b' = -\ 66.92$
(27) = (23) + (24) $a' = +\ 87.22$
(28) $b' \cot Q = +\ 82.67$
(27) + (28) $a' + b' \cot Q = +\ 169.89$

		h	m	s
Assumed time, ...	T_0 =	16	3	42.00
Correction of the assumed time, ...	t =		—	0.12
Washington time of the beginning	Oct. 9,	16	3	41.88
Pulkowa time of the beginning	Oct. 9,	23	13	12.94

We have also $C = -4^\circ\ 38'$; the angle from the *Vertex*, $V = -34^\circ\ 21'$; $\theta = -76^\circ\ 29'$, and the magnitude of the eclipse 8.8 digits, or 0.73 of the sun's disc, on the north limb.

Transit of Venus.—Page 416 contains elements and formulæ for computing the principal phases of the Transit of Venus over the disc of the Sun, on the 8th of December, 1874.

Occultations.—Pages 417–419 contain a list of such occultations and near approaches as will be visible at Washington during the year 1874. For the latter, the time of nearest approach, the nearest point of the moon's limb, and the distance of the star from the moon's limb, are stated.

Pages 420–451 contain *Elements for facilitating the Prediction of Occultations of Planets and Stars by the Moon.* The list includes all stars to the $6\frac{1}{2}$ magnitude in the *Catalogue of the British Association*, and a few others of less magnitude, contained in the *Almanac Catalogue of Zodiacal Stars* and chiefly belonging to clusters, which can be occulted during the year 1874.

The elements comprise the *Date*, *the Name*, *Magnitude and Declination of the Star;* the *Limiting Latitudes* within which the occultation may be visible; and, at the time of geocentric conjunction of the moon and star in right ascension, the following quantities;

ζ = Washington mean time,
H = Hour angle of the star at Washington, + when west;

$$X = \frac{15\,(a - a')}{\pi} \cos \delta = 0, \qquad Y = \frac{\delta - \delta'}{\pi},$$

$$x' = \frac{15\,\Delta a}{\pi} \cos \delta, \quad y' = \frac{\Delta \delta}{\pi},$$ the hourly changes of x and y;

in which α and δ are the true right ascension and declination of the moon,

$\Delta\,\alpha$ and $\Delta\,\delta$, their motions in one hour of mean time,

π, the moon's equatorial horizontal parallax,

α' and δ', the apparent right ascension and declination of the star.

The reductions of the mean place of the star at the beginning of the year to its apparent place at the date, are also given to facilitate the reduction of observed occultations.

For any other Washington mean time $T = \mathfrak{T} + t$, we have (μ being the sidereal equivalent of t, and t as a coefficient being expressed in hours)

$h = H + \mu$, the star's hour angle at Washington,

$x = t\,x', \qquad y = Y + t\,y'.$

As the moon's motion is here regarded as uniform, the expressions for x and y are more nearly correct the smaller the interval t. The exact values, to be employed in the reduction of an observed occultation, are

$$x = \frac{\sin(\alpha - \alpha')\cos\delta}{\sin\pi}$$

$$y = \frac{\sin(\delta - \delta')\cos^2\tfrac{1}{2}(\alpha - \alpha') + \sin(\delta + \delta')\sin^2\tfrac{1}{2}(\alpha - \alpha')}{\sin\pi}$$

in which α, δ and π are to be taken from the Ephemeris for the time T. But for predicting the times of *immersion* and *emersion*, and the points on the moon's limb where these appearances take place, the preceding expressions suffice to enable the observer to determine when and where to watch for these phenomena.

For the place of observation, let

φ = its latitude, + when north;

λ = its longitude from Washington, + when west;

(*Bessel.*) $\log e = 8.9122\,05, \qquad \log(1 - e^2) = 9.9970\,916,$

$\sin\chi = e\sin\varphi, \qquad E = (1 - e^2)\sec\chi, \qquad F = \sec\chi.$

$\mu' = 54147.8 \sin 1'', \qquad \log\mu' = 9.41916.$

The constants for the place, required both in the prediction of occultations and the reduction of those observed, are φ, λ, and $E\sin\varphi$, $F\cos\varphi$, $\mu' F\cos\varphi$, or their logarithms.

The values of E and F and their logarithms are given for different latitudes in the following table:

φ	*E.*	*F.*	Log *E.*	Log *F.*
0°	1—.0067	1.0000	9.9971	0.0000
±10	1—.0066	1.0000	9.9971	0.0000
20	1—.0063	1.0004	9.9973	0.0002
30	1—.0059	1.0008	9.9975	0.0004
40	1—.0053	1.0014	9.9977	0.0006
50	1—.0047	1.0020	9.9979	0.0009
60	1—.0042	1.0025	9.9982	0.0011
70	1—.0037	1.0030	9.9984	0.0013
80	1—.0034	1.0033	9.9985	0.0014
90	1—.0033	1.0034	9.9985	0.0014

An occultation will not be visible unless,

1. The latitude of the place is included within the limiting parallels;
2. At the time of occultation, or the local mean time ($T - \lambda$), the sun is sufficiently below the horizon;

3. At that time the star is above the horizon, or its local hour angle $(h-\lambda)$ is numerically less than τ found by the formula

$$\cos\tau = -\tan\varphi\tan\delta'.$$

A table of τ, or the hour angle of a body in the horizon, computed for the latitude of the place and different declinations, will be useful for such comparisons.

These conditions can generally be determined in advance, as in latitudes less than 60° $(\text{ϭ}-\lambda)$ may be used instead of $(T-\lambda)$ except within two hours of sunrise or sunset; and $(H-\lambda)$ instead of $(h-\lambda)$ except within half an hour of the star's rising or setting. For these exceptional cases, which, however, are not favorable for observation, the time of *apparent* conjunction in right ascension, or some nearer approximation to the time of occultation, can be subsequently employed.

Having ascertained that an occultation will be visible, we may proceed to compute the times of immersion and emersion by the following formulæ:

1. To find approximately the time* of *apparent* conjunction in right ascension, as affected by parallax;

$$u = F\cos\varphi\sin(H-\lambda)$$
$$u' = \mu' F\cos\varphi\cos(H-\lambda)$$

In *hours*, $$(t) = \frac{u}{x'-u'}$$

Washington time of *apparent* conjunction, $(T) = \text{ϭ} + (t)$

Local " " " $(T)-\lambda$

The value of (T) to the nearest tenth of an hour is sufficiently accurate. If a closer approximation is desired, the computation may be repeated, using $h = H + (\mu)$ instead of H, (μ) being the sidereal equivalent of (t),

$$x = (t)\,x' \qquad (t') = -\frac{x-u}{x'-u'}$$
$$(T') = (T) + (t').$$

2. To find a nearer approach to the time of either phase, let us assume the Washington mean time T, which for the first computation may be the computed time of *apparent* conjunction, or some conjectural time near it. For this time find

$$t = T - \text{ϭ} \qquad h = H + \mu, \text{ or } h-\lambda = H-\lambda+\mu$$
$$x = t\,x' \qquad y = Y + t\,y',$$

and then T_1 and T_2, the approximate Washington mean times of immersion and emersion, by the following formulæ. The local mean times will be found by subtracting from T_1 and T_2 the longitude of the place.

$$A\sin B = E\sin\varphi \qquad u = F\cos\varphi\sin(h-\lambda)$$
$$A\cos B = F\cos\varphi\cos(h-\lambda)\dagger \qquad v = A\sin(B-\delta')$$
$$u' = \mu' A\cos B$$
$$v' = \mu' u\sin\delta'$$

[or, with other auxiliaries than A and B,

$$b = F\cos\varphi\cos(h-\lambda) \qquad u' = b\,\mu' \qquad v = E\sin\varphi\cos\delta' - b\sin\delta']$$
$$m\sin M = x-u \qquad n\sin N = x'-u'$$
$$m\cos M = y-v \qquad n\cos N = y'-v'$$

(*Burckhardt.*) $k = .27227$ $\log k = 9.43500$

$$\cos\psi = \frac{m\sin(M-N)}{k} \qquad \psi < 180°$$

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* It is convenient, but not necessary, to have this time.

† If $(h-\lambda)$ be restricted to values numerically less than 12^h, or 180°, B may be taken in the same quadrant with $(h-\lambda)$, and have the same sign as the latitude. For a place where many occultations are observed, tables of A, B, u and u' for different values of $(h-\lambda)$, or of $E\sin\phi\cos\delta'$ for different declinations, would be convenient.

	For *Immersion.*	For *Emersion.*
In hours,	$t_1 = -\frac{m \cos (M-N)}{n} - \frac{k \sin \psi}{n}$	$t_2 = -\frac{m \cos (M-N)}{n} + \frac{k \sin \psi}{n}$
Washington mean time,	$T_1 = T + t_1$	$T_2 = T + t_2$
Local " "	$T_1 - \lambda$	$T_2 - \lambda$

3. Assuming now $T_1 = \sigma + t + t_1$ for the Immersion, or $T_2 = \sigma + t + t_2$ for the Emersion, as the Washington time instead of T, and recomputing, we can obtain nearer approximations to the times of these phenomena. But the first operation will give the times usually within one or two minutes, which is sufficiently accurate for watching for an immersion. For an emersion a more accurate knowledge is desirable. But for this purpose it will often be sufficient to substitute $(h_2 - \lambda) = (h - \lambda + \frac{1}{2} \mu_2)$ for $(h - \lambda)$ in the computation of u' and v', and, using the same m and M as before, recompute n, N, ψ and t_2, a new correction to be added to T.

If log. $m \sin (M-N) = 9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\cos \psi < 1$, or $\cos \psi > 1$. In the latter case the impossible value of $\cos \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the Ephemeris of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 0°$, or $180°$, according as $m \sin (M-N)$ is $+$ or $-$; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M-N)}{n}$$

The distance from the moon's limb is then

$$\pi \, [m \sin (M-N) - k],$$

disregarding the sign of $m \sin (M-N)$; or, allowing for the augmentation of the semidiameter,

$$\pi \, [m \sin (M-N) - k] \, [1 + z \sin \pi],$$

where

$$z = A \cos (B - \delta').$$

4. Having found satisfactorily the times of immersion and emersion, and therefore N and ψ in each case, we have as the angle from the *North point* of the moon's limb and reckoned towards the *West*,

$$Q = 90° - N - \psi \quad \text{for an } \textit{Immersion},$$
$$Q = 90° - N + \psi \quad \text{for an } \textit{Emersion};$$

and, taking

$$c \sin C = u + t\, u'$$
$$c \cos C = v + t\, v',$$

in which the last value of t for the particular phase is properly used, we have as the angle from the *Vertex* of the moon's limb, or that point which is nearest the zenith,

$$V = Q + C$$

also reckoned in the same direction as Q.

For the image as seen through an inverting telescope, these angles should be increased by 180°.

5. As a check on the accuracy of the work, we have, using the last computed values of the several quantities,

$$[(x-u) + t\,(x' - u')]^2 + [(y-v) + t\,(y' - v')]^2 = k^2 = 0.07413;$$

Or, we may recompute with the last determined time of immersion, or of emersion, u, v, x, and y, and we should have for either, as the condition of the phenomenon,

$$(x-u)^2 + (y-v)^2 = k^2 = 0.07413$$

or,

$$\log m = \log k = 9.4350$$

Greater values than these indicate that the computed time of immersion is too early, and of emersion too late, by a quantity nearly proportional to the difference.

As an example, suppose it is required to find the times of immersion and emersion of 96 Piscium, January 23, 1874, at Chicago, Illinois, for which

$$\varphi = +41^\circ\ 50'.0 \qquad \lambda = +0^h\ 42^m.2.$$

The data for the computation are given on page 421. We see in advance that ϕ is between the limiting latitudes; that $(☌ - \lambda)$ is more than 8^h, and nearly three hours after sunset; and that $(H - \lambda)$ is within about three hours of the meridian.

The constants of the place are:

	$\text{l. sin}\ \phi = 9.8241$		$\text{l. cos}\ \phi = 9.8722$		$\log F \cos \phi = 9.8728$
	$\log E = 9.9977$		$\log F = 0.0006$		$\log \mu' = 9.4192$
(1)	$\log E \sin \phi = 9.8218$	(2)	$\log F \cos \phi = 9.8728$	(3)	$\log \mu' F \cos \phi = 9.2920$

From page 421 we find, for the time of *geocentric* conjunction:

Washington time,	$☌ = \overset{h}{8}\ \overset{m}{44.4}$	$Y = +.2446$	$\delta' = +\overset{\circ}{6}\ \overset{\prime}{38.5}$
	$H = +3\ 34.8$	$x' = .5338$	$\text{l. sin}\ \delta' = 9.0631$
	$☌ - \lambda = 8\ 2.2$	$y' = +.2677$	
	$H - \lambda = +2\ 52.6 = +43^\circ\ 9'.0$		

1. For an approximation to the time of *apparent* conjunction, we have:

(2)	$\log F \cos \phi = 9.873$	(3)	$\log \mu' F \cos \phi = 9.292$	$x' = .534$
(4)	$\text{l. sin}\ (H - \lambda) = 9.835$	(5)	$\text{l. cos}\ (H - \lambda) = 9.863$	$u' = +.143$
(6)=(2)+(4)	$\log u = 9.708$	(7)=(3)+(5)	$\log u' = 9.155$	$x' - u' = +.391$
(8)	$\log (x' - u') = 9.592$			
(6)-(8)	$\log (t) = 0.116$		$☌ = \overset{h}{8}\ \overset{m}{44.4}$	
			$(t) = +1.3 = +\ 1\ 18.0$	
Washington mean time,			$(T) = ☌ + (t) = 10\ 2.4$	

2. Assuming this time, we proceed as follows to find the times of immersion and emersion:

(9) Sid. eq. of t.	$\mu = +\overset{h}{1}\ \overset{m}{18.2}$		(25)	$X = 0.$
(10)	$H - \lambda = +2\ 52.6$		(26)	$t x' = 1.3 \times .5338 = +\ .6939$
(11)=(9)+(10)	$h - \lambda = +4\ 10.8 = +62^\circ\ 42'.0$		(27)	$Y = +\ .2446$
			(28)	$t y' = 1.3 \times .2677 = +\ .3480$
(12)	$\text{l. sin}\ (h - \lambda) = 9.9487$			
(13)=(2)	$\log F \cos \phi = 9.8728$		(29)=(25)+(26)	$x = +\ .6939$
(14)	$\text{l. cos}\ (h - \lambda) = 9.6615$		(30)	$u = +\ .6630$
			(31)=(27)+(28)	$y = +\ .5926$
(15)	$\text{l. sin}\ \delta' = 9.0631$	$\left.\right\}$	(32)	$v = +\ .6194$
(16)=(12)+(13)	$\log u = 9.8215$	$\left.\right\}$ l. $v' = 8.3038$	(33)=(29)-(30)	$x - u = m \sin M = +\ .0309$
(17) *Constant,*	$\log \mu' = 9.4192$	$\left.\right\}$	(34)=(31)-(32)	$y - v = m \cos M = -\ .0268$
(18)=(13)+(14)	$\log A \cos B = 9.5343$	$\left.\right\}$ l. $u' = 8.9535$		
(19)=(1)	$\log A \sin B = 9.8218$		(35)	$x' = +\ .5338$
(20)=(19)-(18)	$\text{l. tan}\ B = 0.2875$	$B = \overset{\circ}{62}\ \overset{\prime}{43.0}$	(36)	$u' = +\ .0898$
(21)	$\text{l. sin}\ B = 9.9488$	$\delta' = 6\ 38.5$	(37)	$y' = +\ .2677$
(22)=(19)-(21)	$\log A = 9.8730$	$B - \delta' = 56\ 4.5$	(38)	$v' = +\ .0201$
(23)	$\text{l. sin}\ (B - \delta') = 9.9190$		(39)=(35)-(36)	$x' - u' = n \sin N = +\ .4440$
(24)=(22)+(23)	$\log v = 9.7920$		(40)=(37)-(38)	$y' - v' = n \cos N = +\ .2476$

(41)	$\log m \sin M = 8.4900$		(45)	$\log n \sin N = 9.6474$
(42)	$\log m \cos M = 8.4281\,n$		(46)	$\log n \cos N = 9.3938$
(43)=(41)-(42)	$\text{l. tan}\ M = 0.0619\,n$	$M = \overset{\circ}{130}\ \overset{\prime}{56}$	(47)=(45)-(46)	$\text{l. tan}\ N = 0.2536$
(44)	$\text{l. sin}\ M = 9.8782$	$N = 60\ 51$	(48)	$\text{l. sin}\ N = 9.9412$
		$M - N = 70\ 5$		
(49)=(41)-(44)	$\log m = 8.6118$		(49)	$\log m = 8.6118$
(50)	$\text{l. sin}\ (M - N) = 9.9732$		(53)	$\text{l. cos}\ (M - N) = 9.5323$
(51) *Constant,*	$\log \frac{1}{k} = 0.5650$	$90^\circ - N = \overset{\circ}{29}\ \overset{\prime}{9}$	(54)=(48)-(45)	$\log \frac{1}{n} = 0.2938$
(52)=(49)+(50)+(51)	$\text{l. cos}\ \psi = 9.1500$	$\psi = 81\ 53$	(55)=(49)+(53)+(54)	$\log \frac{m}{n} \cos (M - N) = 8.4379$

	Angle from N. point at Im. $Q_1 = -\ 53°$	(54)	$\log\frac{1}{n} = 0.2938$
	" " " at Em. $Q_2 = 111$	(56)	$\log k = 9.4350$
		(57)	$\text{l.}\sin\psi = 9.9956$
(59)	$\frac{k}{n}\sin\psi = .5302$	(58)	$\text{l.}\frac{k}{n}\sin\psi = 9.7244$
(60)	$-\frac{m}{n}\cos(M - N) = -.0274$		

	For *Immersion*.	For *Emersion*.
(60) — (59)	$t_1 = -.5576 = -\ 0^{h}\ 33^{m}.4$	$t_2 = +.5028 = +\ 0^{h}\ 30^{m}.2$
	$T = 10\ \ 2.4$	$T = 10\ \ 2.4$
Washington mean time,	$T_1 = T + t_1 = 9\ 29.0$	$T_2 = T + t_2 = 10\ 32.6$
	$\lambda = 0\ 42.2$	$\lambda = 0\ 42.2$
	$T_1 - \lambda = 8\ 46.8$	$T_2 - \lambda = 9\ 50.4$

3. Assuming these times and revising the computation, we obtain as a nearer approximation:

	$t_1 = -\ 0^{h}\ 0^{m}.7$	$t_2 = -\ 0^{h}\ 0^{m}.6$
	$T'_1 - \lambda = 8\ 46.1$	$T'_2 - \lambda = 9\ 49.8$
Angle from N. point,	$Q'_1 = 208°.1$	$Q'_2 = 110°.4$
	$c_1 \sin C_1 = u + t'_1\, u' = +\ .6048$	$c_2 \sin C_2 = u + t'_2\, u' = +\ .7016$
	$c_1 \cos C_1 = v + t'_1\, v' = +\ .6083$	$c_2 \cos C_2 = v + t'_2\, v' = +\ .6296$
and, by the Traverse Table,*	$C_1 = +\ 44°.8$	$C_2 = +\ 48°.1$
Angle from Vertex,	$V_1 = Q'_1 + C_1 = +\ 252°.9$	$V_2 = Q'_2 + C_2 = +\ 158.5$

We shall also find for $[(x - u) + t'\,(x' - u')]^2 + [(y - v) + t'\,(y' - v')]^2$

At *Im.* 0.07414 At *Em.* 0.07413

Instead, however, of an entire recomputation, a partial revision may be made, like the following, for correcting the computed time of emersion:

(9)	$\frac{1}{2} t_2 = \frac{1}{2}\mu_2 = +\ 0^{h}\ 15^{m}.1$		(35)	$x' = +\ .5338$
(10)	$h - \lambda = +\ 4\ 10.8$		(36)	$u' = +\ .0782$
(11)=(9)+(10)	$h_2 - \lambda = +\ 4\ 25.9 = +\ 66°\ 28'.5$		(37)	$y' = +\ .2677$
			(38)	$v' = +\ .0208$
(12)	$\text{l.}\sin(h_2 - \lambda) = 9.9623$		(39)=(35)-(36)	$x' - u' = n\sin N = +\ .4556$
(13)=(2)	$\log F\cos\phi = 9.8728$		(40)=(37)-(38)	$y' - v' = n\cos N = +\ .2469$
(14)	$\text{l.}\cos(h_2 - \lambda) = 9.6011$			
			(45)	$\log n\sin N = 9.6586$
(15)	$\text{l.}\sin\delta = 9.0631$		(46)	$\log n\cos N = 9.3925$
(16)=(12)+(13)	$\log u = 9.8351$	$\text{l.}\,v' = 8.3174$	(47)=(45)-(46)	$\text{l.}\tan N = 0.2661$
(17)	$\log\mu' = 9.4192$		(48)	$\text{l.}\sin N = 9.9441$
(18)=(13)+(14)	$\log A\cos B = 9.4739$	$\text{l.}\,u' = 8.8931$		
			(49)	$\log m = 8.6118$
(49) From 1st Comp.	$\log m = 8.6118$	$M = 130°\ 56'$	(53)	$\text{l.}\cos(M - N) = 9.5467$
(50)	$\text{l.}\sin(M - N) = 9.9713$	$N = 61\ 33$	(54)=(48)-(45)	$\log\frac{1}{n} = 0.2855$
(51) *Constant,*	$\log\frac{1}{k} = 0.5650$	$M - N = 69\ 23$	(55)=(49)+(53)+(54)	$\log\frac{m}{n}\cos(M - N) = 8.4440$
(52)=(49)+(50)+(51)	$\text{l.}\cos\psi = 9.1481$	$90° - N = 28\ 27$	(56) *Constant,*	$\log k = 9.4350$
		$\psi = 81\ 55$	(57)	$\text{l.}\sin\psi = 9.9957$
Angle from N. point,		$Q_2 = 110°.5$	(58)=(54)+(56)+(57)	$\log\frac{k}{n}\sin\psi = 9.7162$

(59)	$-\frac{m}{n}\cos(M - N)$	$= -\ .0278$
(60)	$\frac{k}{n}\sin\psi$	$= +\ .5202$
(59)+(60)	t'_2	$= +\ .4924 = +\ 0^{h}\ 29^{m}.5$
	T	$= 10\ \ 2.4$
Washington mean time,	$T'_2 = T + t'_2$	$= 10\ 31.9$
Chicago mean time,	$T'_2 - \lambda$	$= 9\ 49.7$

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* A large portion of this computation may be made by the Traverse Table instead of Logarithms.

Jupiter's Satellites, pages 452–483.—These pages contain for the several Satellites—

1. The Washington mean times of the occultations, eclipses, transits and transits of shadows, arranged in the order of time. W, after a phase, indicates such as are visible at Washington, or which occur when the sun is more than 8° below and Jupiter more than 8° above the horizon of that place.

2. A diagram for each month constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipse for an inverting telescope. The stars indicate the points of disappearance and reappearance, distinguished by *d* and *r*. The space between them shows the position of the shadow of the planet.

3. Washington mean time of geocentric superior conjunction, arranged for each planet separately.

4. The rectangular coördinates x' and y' for successive times reckoned from the next preceding superior conjunction, computed for a constant major axis and maximum minor axis of the apparent ellipse described by the satellite as seen from the sun at its mean distance from the planet.

5. The *factors* by which x' and y' are to be multiplied to obtain the actual coördinates x and y for the apparent ellipse, as seen from the earth at any date; the inclination p of the minor axis to the circle of declination, reckoned from the *north*, positive towards the *east;* and the actual coördinates x and y at the times of eclipse of each satellite.

The coördinates are referred to the centre of the primary and to the major and minor axes of the ellipse described by the satellite, and are expressed in seconds of arc. x is positive when on the *east* side of the planet; y is positive when *north*. By means of them the configurations of the satellite can be found at any time.

The *Elements of Saturn's Ring*, page 484, give the *apparent* magnitude and position of its several components for each 20 days. The *apparent Discs of* Venus and Mars are given on the same page for each 30 days.

The *Phenomena*, pages 485, 486, include the times of conjunction, opposition and quadrature, perihelion and aphelion, stationary points, and conjunction, with the moon in right ascension, of the principal planets.

The *Positions of the Principal Observatories* are given on pages 487, 488. The authorities for these positions, and the longitudes with reference to the meridians upon which they actually depend, will be found in the American Ephemeris for 1870, 1871, and 1872.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1874.

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (p. 250) are taken from STRUVE and PETERS. They are:

$$\text{Precession}^{*} = 50''.2411 + 0''.0002268\, t,$$
$$\text{Obliquity}^{\dagger} = 23^\circ\ 27'\ 54''.22 - 0''.4645\, t - 0''.0000014\, t^2,$$
$$\text{Aberration}^{\ddagger} = 20''.4451 \pm 0''.0111,$$

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulæ given in his *Numerus Constans Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

In the Ephemerides of the Sun, Moon, and Planets, the Obliquity of the Ecliptic and the Nutation of HANSEN and OLUFSEN's *Tables du Soleil* have been used. The Aberration in these tables, 20''.255, has been used in the Ephemeris of the Sun. The Mean Obliquity exceeds that of PETERS by 0''.34.

The General Constants for Star Reduction are adapted to the formulæ given on page 260. They are computed from the *Tables to facilitate the Reduction of Places of the Fixed Stars, prepared for the use of the American Ephemeris and Nautical Almanac*, Washington, 1869, which have been used in the preparation of previous volumes of this work subsequent to that of 1861.

The Mean Places of the 198 Standard Stars have also been taken from the same tables. Dr. GOULD's *Standard Places of Fundamental Stars, U. S. Coast Survey*, Washington, 1866, is the authority given for 48 Northern Circumpolar Stars and 128 Time Stars; the *British Nautical Almanac* for 1848 for 13 Stars south of —40° declination; and WOLFER's *Tabulæ Reductionum Observationum Astronomicarum*, Berlin, 1858, for Sirius, Castor, (the mean of the components,) Procyon, γ Draconis, and α Cephei. The magnitudes, except of the 13 Southern Stars, are ARGELANDER's.

The reductions from the mean to the apparent places of the Stars contained in WOLFER's *Tabulæ Reductionum*, except α and δ Ursæ Minoris, have been derived from that work; the reductions of the rest from the *Tables of the American Ephemeris*. These reductions include the terms of the formulæ on pages 260 and 497, so far as sensible, except those depending on the moon's longitude. The terms depending on 2 ☾ have, however, been applied to the four stars whose places are given for every day.* The values of these terms for seven circumpolar stars, computed for 1870, are given in Table VIII. of this Appendix.

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[*] PETERS' *Numerus Constans Nutationis*, p. 71.

[†] Ibid., pp. 66 and 71.

[‡] STRUVE's *Constant de l'Aberration*, p. 47.

APPENDIX.

To the position of Sirius, as derived from **Wolfers**, (the correction of the "*Tabula Subsidiaria*" being omitted), have been applied the terms given by **Auwers**,*

$$q=+0^{s}.0647-0^{s}.000718\ (t-1860)+0^{s}.1510\cos\ (u+\ 1^{\circ}\ 6')$$
$$r=-0''.630\ -0''.00044\ \ (t-1860)+1''.445\ \ \sin\ (u+23^{\circ}\ 30')$$

in which u, the eccentric anomaly from the inferior apsis, is found by the formula

$$u-e\sin u=n\ (t-T),$$

from the elements

$T=1793.830$, passage through the inferior apsis,
$e=\ \ 0.6010$, the eccentricity,
$n=\ \ 7^{\circ}.28475$, mean annual motion in orbit,
$49^{y}.418$, period of revolution.

The Mean Places of such of the Moon-culminating Stars as are not found in the list of standard stars, have been taken in order of preference from the *Almanac Catalogue of Zodiacal Stars printed for the use of the American Ephemeris and Nautical Almanac, Washington*, 1864; *the Greenwich Twelve-Year Catalogue;* and the *Catalogue of the British Association.*

The Ephemeris of the Sun† is constructed from **Hansen** and **Olufsen**'s *Tables du Soleil*, Copenhagen, 1853. The Sun's rectangular equatorial coördinates have been computed from the longitudes and latitudes by the following formulæ:

$$\begin{aligned}
X &= R\cos\lambda\\
Y &= R\sin\lambda\cos\omega-19.3\ R\,\beta\\
Z &= R\sin\lambda\sin\ \omega+44.5\ R\,\beta\\
X' &= X+Y\sec\omega\ \Delta\lambda\\
Y' &= Y-X\cos\omega\ \Delta\lambda+Z\,\Delta\omega-\ 9.4\ \tau\ R\sin(\odot+187^{\circ})\\
Z' &= Z-X\sin\ \omega\ \Delta\lambda-Y\Delta\omega+21.7\ \tau\ R\sin(\odot+187^{\circ})
\end{aligned}$$

in which λ, β and ω are referred to the equinox and ecliptic of the date; $\Delta\lambda$ is the reduction of longitude for precession and nutation from Jan. 0; $\Delta\omega$ the reduction of the mean to the apparent obliquity; τ the part of the year since Jan. 0; and the numerical coefficients are in units of the 7th place of decimals.

The mean equatorial Horizontal Parallax of the Sun, adopted from Prof. **Newcomb**'s *Investigation of the Distance of the Sun and the Elements which depend on it*,‡ is $8''.848$. The adopted Semidiameter of the Sun at the Earth's mean distance is $16'\ 2''$.

The Ephemeris of the Moon has been constructed from **Peirce**'s *Tables of the Moon, 2d edition*, Washington, 1865. They include the *Tables of the Moon's Parallax* constructed from **Walker**'s and **Adams**'s formulæ.

The Semidiameter of the Moon has been computed from the Moon's Horizontal Parallax by the formula,

$$S=.272274\ \pi+2''.5.$$

A semidiameter $2''.5$ less is found to be better adapted for the computation of eclipses and occultations.

The Ephemeris of Mercury has been derived from the Tables of Prof. **Winlock**, which are based on the theory of **Le Verrier**, published in the Additions to the *Connaissance des Temps* for 1848.

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† From **Carlini**'s Tables before 1858.

‡ *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1865, Appendix II.

CONSTRUCTION OF THE ALMANAC.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from those of Lindenau, in a form similar to that adopted for the Lunar Tables: applying Airy's Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. Hugh Breen's results contained in his paper on the *Corrections of* Lindenau's *Elements of the Orbit of Venus*, &c., published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from Le Verrier's *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$L = 289^{\circ}\ 51'\ 53''.5 + 2106691''.706\,t.$
$\pi = 129^{\circ}\ 32'\ 59''.6 + 49''.57459\,t.$
$\Omega = 75^{\circ}\ 23'\ 27''.3 + 32''.88424\,t.$
$i = 3^{\circ}\ 23'\ 34''.6 + 0''.04363\,t.$
$e = 1410''.6847 - 0''.11157\,t.$
$n = 2106641''.438$
$a = 0.7233323$

The Ephemeris of Mars is derived from manuscript Tables constructed from Lindenau's Tables in the same manner as the Tables of Venus. Mr. Hugh Breen's results contained in his paper *On the Corrections of* Lindenau's *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and Le Verrier's secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$L = 320^{\circ}\ 13'\ 33''.87 + 689101''.1527\,t.$
$\pi = 333^{\circ}\ 23'\ 17''.84 + 65''.9990\,t.$
$\Omega = 48^{\circ}\ 25'\ 55''.29 + 27''.6997\,t.$
$i = 1^{\circ}\ 51'\ 2''.20 - 0''.02141\,t.$
$e = 19238''.75 + 0''.18549\,t.$
$n = 689050''.8927$
$a = 1.5236915$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from Bouvard's Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The Ephemeris of Saturn is derived from Bouvard's Tables. The perturbations produced by Jupiter, and the change of the Great Inequality since 1840, have been increased by $\frac{1}{50}$ of their value. Adams's Table in the *British Nautical Almanac* for 1851 has been substituted for Bouvard's Table XLII. The following corrections of the elements for 1855.0 have also been introduced:

corr. mean long. $= +\ 4''.9$
corr. long. of node $= -143''.0$
corr. inclination $= -\ 5''.7 + 0''.0149\,t.$

The Ephemeris of Uranus is derived from the elliptical portion of Bouvard's Tables, with Le Verrier's corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel* (*dite Uranus*), published in the *Connaissance des Temps* for 1849, and also Peirce's corrections and perturbations arising from the influence of Neptune.

The Ephemeris of Neptune is derived from Prof. Newcomb's *Tables of Neptune*, Washington, 1866.

APPENDIX.

The eclipses and elongations of Jupiter's Satellites are computed from Damoiseau's Tables.

The semidiameters of the Planets are computed from the following values:

	Semidiameter.	Log Dist.	Authority.
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Jupiter (equat.)	20.00	0.70	
Saturn (equat.)	9.38	0.95	

The apparent elements of Saturn's Rings are computed from Bessel's data, except those for Bond's dusky ring.

The Tables for the eclipses of the sun are adapted to the modification of Bessel's formulæ, suggested by T. Henry Safford, jr. The formulæ are given in Peirce's *Spherical Astronomy* and Chauvenet's *Spherical and Practical Astronomy*, Vol. I.

The prediction of the Transit of Venus has been made by Mr. G. W. Hill, from his corrected elements of the orbit of that planet.

The elements for occultations of stars by the moon are adapted to Bessel's method in the *Astronomische Nachrichten*, Vol. VII., and the *Berliner Astronomisches Jahrbuch* for 1831. The formulæ are also to be found in Chauvenet's *Astronomy.*

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the stereotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

The principal computations of the Ephemeris have been distributed in the following manner:

The Sun has been computed by Mr. Eastwood; the Ephemeris of the Moon and the Lunar Distances by Professor Runkle. Mercury and Venus have been prepared by Mr. Austin, Mars by Mr. Oliver, Jupiter by Professor Kendall, Saturn by Professor Van Vleck, Uranus by Mr. Ferrel, and Neptune by Mr. Wiessner. The Fixed Stars and the General Constants for Reduction have been computed under the direction of the Superintendent by Mr. Loomis and Mr. Packard, and the Occultations by Mr. Downes assisted by Mr. Wiessner. The Eclipses have been computed and the Charts projected by Mr. G. W. Hill. The Table of Positions of Observatories, orginally compiled by Dr. B. A. Gould, was revised by him for the volume for 1870. The results of the most recent determinations have been incorporated.

TABLE I.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	18
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$0^{\text{h.}}$	$1^{\text{h.}}$	$2^{\text{h.}}$	$3^{\text{h.}}$	$4^{\text{h.}}$	$5^{\text{h.}}$	$6^{\text{h.}}$	$7^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807		
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16	.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44 069	0 53.899	1 3.728	1 13.558	29	.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34	.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36	.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	.153
57	0 9 338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443		
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17	.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21 546	2 31.375	24	.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	.126
47	1 26.336	1 36.166	1 45.995	1 55 825	2 5.655	2 15.484	2 25.314	2 35.143	47	.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48	.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	.150
56	1 27.811	1 37.640	1 47.470	1 57 299	2 7.129	2 16.959	2 26.788	2 36.618	56	.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080		
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29·533	3 39.363	3 49.193	19	.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$0^{\text{h.}}$		$1^{\text{h.}}$		$2^{\text{h.}}$		$3^{\text{h.}}$		$4^{\text{h.}}$		$5^{\text{h.}}$		$6^{\text{h.}}$		$7^{\text{h.}}$		For Seconds.	
m	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	s	s
0	0	0.000	0	9.856	0	19.713	0	29.569	0	39.426	0	49.282	0	59.139	1	8.995		
1	0	0.164	0	10.021	0	19.877	0	29.734	0	39.590	0	49.447	0	59.303	1	9.160	1	0.003
2	0	0.329	0	10.185	0	20.041	0	29.898	0	39.754	0	49.611	0	59.467	1	9.324	2	.005
3	0	0.493	0	10.349	0	20.206	0	30.062	0	39.919	0	49.775	0	59.632	1	9.488	3	.008
4	0	0.657	0	10.514	0	20.370	0	30.227	0	40.083	0	49.939	0	59.796	1	9.652	4	.011
5	0	0.821	0	10.678	0	20.534	0	30.391	0	40.247	0	50.104	0	59.960	1	9.817	5	.014
6	0	0.986	0	10.842	0	20.699	0	30.555	0	40.412	0	50.268	1	0.124	1	9.981	6	.016
7	0	1.150	0	11.006	0	20.863	0	30.719	0	40.576	0	50.432	1	0.289	1	10.145	7	.019
8	0	1.314	0	11.171	0	21.027	0	30.884	0	40.740	0	50.597	1	0.453	1	10.310	8	.022
9	0	1.478	0	11.335	0	21.191	0	31.048	0	40.904	0	50.761	1	0.617	1	10.474	9	.025
10	0	1.643	0	11.499	0	21.356	0	31.212	0	41.069	0	50.925	1	0.782	1	10.638	10	.027
11	0	1.807	0	11.663	0	21.520	0	31.376	0	41.233	0	51.089	1	0.946	1	10.802	11	.030
12	0	1.971	0	11.828	0	21.684	0	31.541	0	41.397	0	51.254	1	1.110	1	10.967	12	.033
13	0	2.136	0	11.992	0	21.849	0	31.705	0	41.561	0	51.418	1	1.274	1	11.131	13	.036
14	0	2.300	0	12.156	0	22.013	0	31.869	0	41.726	0	51.582	1	1.439	1	11.295	14	.038
15	0	2.464	0	12.321	0	22.177	0	32.034	0	41.890	0	51.746	1	1.603	1	11.459	15	.041
16	0	2.628	0	12.485	0	22.341	0	32.198	0	42.054	0	51.911	1	1.767	1	11.624	16	.044
17	0	2.793	0	12.649	0	22.506	0	32.362	0	42.219	0	52.075	1	1.932	1	11.788	17	.047
18	0	2.957	0	12.813	0	22.670	0	32.526	0	42.383	0	52.239	1	2.096	1	11.952	18	.049
19	0	3.121	0	12.978	0	22.834	0	32.691	0	42.547	0	52.404	1	2.260	1	12.117	19	.052
20	0	3.285	0	13.142	0	22.998	0	32.855	0	42.711	0	52.568	1	2.424	1	12.281	20	.055
21	0	3.450	0	13.306	0	23.163	0	33.019	0	42.876	0	52.732	1	2.589	1	12.445	21	.057
22	0	3.614	0	13.471	0	23.327	0	33.183	0	43.040	0	52.896	1	2.753	1	12.609	22	.060
23	0	3.778	0	13.635	0	23.491	0	33.348	0	43.204	0	53.061	1	2.917	1	12.774	23	.063
24	0	3.943	0	13.799	0	23.656	0	33.512	0	43.368	0	53.225	1	3.081	1	12.938	24	.066
25	0	4.107	0	13.963	0	23.820	0	33.676	0	43.533	0	53.389	1	3.246	1	13.102	25	.068
26	0	4.271	0	14.128	0	23.984	0	33.841	0	43.697	0	53.554	1	3.410	1	13.266	26	.071
27	0	4.435	0	14.292	0	24.148	0	34.005	0	43.861	0	53.718	1	3.574	1	13.431	27	.074
28	0	4.600	0	14.456	0	24.313	0	34.169	0	44.026	0	53.882	1	3.739	1	13.595	28	.077
29	0	4.764	0	14.620	0	24.477	0	34.333	0	44.190	0	54.046	1	3.903	1	13.759	29	.079
30	0	4.928	0	14.785	0	24.641	0	34.498	0	44.354	0	54.211	1	4.067	1	13.924	30	.082
31	0	5.093	0	14.949	0	24.805	0	34.662	0	44.518	0	54.375	1	4.231	1	14.088	31	.085
32	0	5.257	0	15.113	0	24.970	0	34.826	0	44.683	0	54.539	1	4.396	1	14.252	32	.088
33	0	5.421	0	15.278	0	25.134	0	34.990	0	44.847	0	54.703	1	4.560	1	14.416	33	.090
34	0	5.585	0	15.442	0	25.298	0	35.155	0	45.011	0	54.868	1	4.724	1	14.581	34	.093
35	0	5.750	0	15.606	0	25.463	0	35.319	0	45.176	0	55.032	1	4.888	1	14.745	35	.096
36	0	5.914	0	15.770	0	25.627	0	35.483	0	45.340	0	55.196	1	5.053	1	14.909	36	.099
37	0	6.078	0	15.935	0	25.791	0	35.648	0	45.504	0	55.361	1	5.217	1	15.073	37	.101
38	0	6.242	0	16.099	0	25.955	0	35.812	0	45.668	0	55.525	1	5.381	1	15.238	38	.104
39	0	6.407	0	16.263	0	26.120	0	35.976	0	45.833	0	55.689	1	5.546	1	15.402	39	.107
40	0	6.571	0	16.427	0	26.284	0	36.140	0	45.997	0	55.853	1	5.710	1	15.566	40	.110
41	0	6.735	0	16.592	0	26.448	0	36.305	0	46.161	0	56.018	1	5.874	1	15.731	41	.112
42	0	6.900	0	16.756	0	26.612	0	36.469	0	46.325	0	56.182	1	6.038	1	15.895	42	.115
43	0	7.064	0	16.920	0	26.777	0	36.633	0	46.490	0	56.346	1	6.203	1	16.059	43	.118
44	0	7.228	0	17.085	0	26.941	0	36.798	0	46.654	0	56.510	1	6.367	1	16.223	44	.120
45	0	7.392	0	17.249	0	27.105	0	36.962	0	46.818	0	56.675	1	6.531	1	16.388	45	.123
46	0	7.557	0	17.413	0	27.270	0	37.126	0	46.983	0	56.839	1	6.695	1	16.552	46	.126
47	0	7.721	0	17.577	0	27.434	0	37.290	0	47.147	0	57.003	1	6.860	1	16.716	47	.129
48	0	7.885	0	17.742	0	27.598	0	37.455	0	47.311	0	57.168	1	7.024	1	16.881	48	.131
49	0	8.049	0	17.906	0	27.762	0	37.619	0	47.475	0	57.332	1	7.188	1	17.045	49	.134
50	0	8.214	0	18.070	0	27.927	0	37.783	0	47.640	0	57.496	1	7.353	1	17.209	50	.137
51	0	8.378	0	18.234	0	28.091	0	37.947	0	47.804	0	57.660	1	7.517	1	17.373	51	.140
52	0	8.542	0	18.399	0	28.255	0	38.112	0	47.968	0	57.825	1	7.681	1	17.538	52	.142
53	0	8.707	0	18.563	0	28.420	0	38.276	0	48.132	0	57.989	1	7.845	1	17.702	53	.145
54	0	8.871	0	18.727	0	28.584	0	38.440	0	48.297	0	58.153	1	8.010	1	17.866	54	.148
55	0	9.035	0	18.892	0	28 748	0	38.605	0	48.461	0	58.317	1	8.174	1	18.030	55	.151
56	0	9.199	0	19.056	0	28.912	0	38.769	0	48.625	0	58.482	1	8.338	1	18.195	56	.153
57	0	9.364	0	19.220	0	29.077	0	38.933	0	48.790	0	58.646	1	8.502	1	18.359	57	.156
58	0	9.528	0	19.384	0	29.241	0	39.097	0	48.954	0	58.810	1	8.667	1	18.523	58	.159
59	0	9.692	0	19.549	0	29.405	0	39.262	0	49.118	0	58.975	1	8.831	1	18.688	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847		
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28·340	3	.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	.011
5	1 19.673	1 29.530	1 39.386	1 49 243	1 59.099	2 8.956	2 18.812	2 28.668	5	.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	10	.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	.036
14	1 21 152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	.055
21	1 22 302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22 262	2 32.118	26	.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	27	.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	36	.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	.110
41	1 25.587	1 35 444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	52	.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar	$16^{\mathrm{h.}}$	$17^{\mathrm{h.}}$	$18^{\mathrm{h.}}$	$19^{\mathrm{h.}}$	$20^{\mathrm{h.}}$	$21^{\mathrm{h.}}$	$22^{\mathrm{h.}}$	$23^{\mathrm{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699		
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29 450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50·313	22	.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162

TABLE IV.

TABLE GIVING THE CORRECTIONS OF *A* AND *B* WHICH DEPEND ON THE ARGUMENTS 2☾, AND ☾—Γ′.

In units of the *fifth* decimal for *A*, and of the *fourth* for *B*.

Arg. (2☾)	*A*☾	*B*☾	Arg. (2☾)	*A*☾	*B*☾	Arg. (2☾	*A*☾	*B*☾	Arg. (☾—Γ′)	*A*′☾
d			d			d			d	
0.0	— 0	—886	4.6	—347	+459	9.2	+359	+410	0	+ 0
0.1	19	885	4.7	337	493	9.3	367	374	1	30
0.2	37	882	4.8	326	526	9.4	374	335	2	59
0.3	55	877	4.9	314	558	9.5	381	298	3	85
0.4	74	870	5.0	302	589	9.6	387	259	4	106
0.5	92	862	5.1	289	619	9.7	392	221	5	122
0.6	111	852	5.2	277	648	9.8	396	180	6	132
0.7	128	841	5.3	263	675	9.9	400	140	7	135
0.8	145	827	5.4	248	701	10.0	403	101	8	130
0.9	163	811	5.5	232	725	10.1	404	59	9	119
1.0	180	793	5.6	217	748	10.2	405	+ 19	10	102
1.1	196	775	5.7	201	769	10.3	405	— 22	11	80
1.2	212	754	5.8	185	788	10.4	404	62	12	53
1.3	228	732	5.9	168	806	10.5	402	103	13	+ 23
1.4	243	707	6.0	151	822	10.6	400	143	14	— 7
1.5	258	682	6.1	133	837	10.7	396	183	15	37
1.6	272	657	6.2	116	849	10.8	392	224	16	66
1.7	285	628	6.3	98	859	10.9	387	263	17	90
1.8	298	598	6.4	79	868	11.0	380	301	18	110
1.9	310	569	6.5	61	875	11.1	374	338	19	125
2.0	322	537	6.6	42	881	11.2	367	376	20	134
2.1	333	503	6.7	24	884	11.3	359	412	21	134
2.2	344	470	6.8	— 6	886	11.4	350	449	22	129
2.3	353	435	6.9	+ 13	885	11.5	340	483	23	116
2.4	362	399	7.0	32	883	11.6	329	516	24	97
2.5	370	362	7.1	49	879	11.7	317	549	25	74
2.6	376	324	7.2	68	873	11.8	306	581	26	47
2.7	383	285	7.3	86	865	11.9	293	610	27	— 17
2.8	389	247	7.4	105	855	12.0	281	640	28	+ 13
2.9	394	209	7.5	123	844	12.1	267	667	29	+ 43
3.0	398	169	7.6	140	831	12.2	252	693		
3.1	401	129	7.7	158	815	12.3	237	717		
3.2	403	88	7.8	175	799	12.4	221	741		
3.3	404	46	7.9	191	781	12.5	206	762		
3.4	405	— 6	8.0	207	761	12.6	190	782		
3.5	405	+ 35	8.1	223	738	12.7	174	800		
3.6	404	76	8.2	239	715	12.8	156	817		
3.7	402	116	8.3	254	691	12.9	138	833		
3.8	399	155	8.4	268	665	13.0	121	845		
3.9	395	196	8.5	282	637	13.1	104	856		
4.0	390	235	8.6	294	607	13.2	85	866		
4.1	385	274	8.7	306	578	13.3	67	873		
4.2	378	312	8.8	319	546	13.4	48	879		
4.3	372	350	8.9	330	514	13.5	30	883		
4.4	364	388	9.0	341	480	13.6	+ 11	885		
4.5	—356	+424	9.1	+350	+446	13.7	— 7	—885		

Multiples of the Period of (2 ☾)	
	d
1	13.661
2	27.322
3	40.982

Multiples of the Period of (☾—Γ′)	
	d
1	27.55
2	55.11

Arguments. *Washington Mean Noon.*

1874.	Arg. (2☾)	Arg. (☾—Γ)	1874.	Arg. (2☾)	Arg. (☾—Γ′)	Remarks.
	d	d		d	d	
Jan. 0	5.327	5.64	Aug. 0	12.415	24.76	Add to the argument for the beginning of any month, the day of the month and Washington mean time, and subtract the largest contained multiple of the period.
Feb. 0	9.005	9.09	Sept. 0	2.433	0.65	
March 0	9.684	9.53	Oct. 0	5.111	3.09	
April 0	13.362	12.98	Nov. 0	8.790	6.54	
May 0	2.380	15.42	Dec. 0	11.468	8.99	
June 0	6.058	18.87	1875.			
July 0	8.737	21.31	Jan. 0	1.486	12.43	

TABLE V.

TABLE GIVING THE CORRECTIONS OF *A* AND *B* DEPENDING ON THE SMALL TERMS OF THE NUTATION.

In units of the *fifth* decimal for *A*, and of the *fourth* for *B*.

WASHINGTON MEAN NOON.

1874.	Δ *A*.	Δ *B*.	1874.	Δ *A*.	Δ *B*.	1874.	Δ *A*.	Δ *B*.
Jan. 0	+ 1	− 11	May 5	+37	+86	Sept. 2	−14	+69
5	− 1	18	10	41	71	7	10	75
10	3	23	15	44	54	12	− 5	79
15	6	28	20	46	35	17	0	81
20	10	31	25	46	17	22	+ 5	80
25	14	32	30	44	+ 1	27	11	77
30	18	32	June 4	40	−16	Oct. 2	15	73
Feb. 4	21	30	9	35	32	7	19	67
9	24	25	14	31	45	12	23	59
14	27	17	19	25	56	17	26	51
19	29	− 7	24	18	64	22	28	43
24	30	+ 5	29	10	66	27	30	35
March 1	30	18	July 4	+ 3	66	Nov. 1	30	27
6	29	34	9	− 3	64	6	31	19
11	28	50	14	9	58	11	32	11
16	25	65	19	15	49	16	32	+ 4
21	21	78	24	20	37	21	32	− 2
26	15	91	29	23	24	26	31	8
31	8	102	Aug. 3	25	− 9	Dec. 1	30	13
April 5	− 2	110	8	26	+ 7	6	30	18
10	+ 5	115	13	26	22	11	30	22
15	13	116	18	24	37	16	30	27
20	20	114	23	22	49	21	29	31
25	27	108	28	−18	+60	26	27	35
30	+33	+ 98				31	+24	−38

$$\begin{aligned}\triangle A = &+.00025 \sin(2\odot - \Omega) + .00009 \sin(2\Gamma' - \Omega)\\ &+.00010 \sin 2(\odot - \Gamma') + .00005 \cos \Gamma'\\ &-.00005 \sin 2(\odot - \Omega) + .00004 \sin 2\Gamma'\\ &-.00011 \sin(3\odot - \Gamma)\end{aligned}$$

$$\begin{aligned}\triangle B = &+0''.0067 \cos(2\odot - \Omega)\\ &-0.0027 \cos(3\odot - \Gamma)\\ &+0.0024 \cos(2\Gamma' - \Omega)\\ &-0.0023 \sin \Gamma'\\ &+0.0008 \cos 2\Gamma'\end{aligned}$$

TABLE VI.

TABLES FOR FINDING THE REDUCTIONS OF MEAN TO APPARENT RIGHT ASCENSIONS WHICH DEPEND ON 2☾ AND ☾ − Γ′.

Hor. Arg. = Star's Right Ascension.

Arg. (2 ☾)	$\Delta_{☾}a$	$\Delta'' a$ ☾													Arg. (2 ☾)
		0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	
d	s	s													d
0.0	-.000	-.0059	-57	-51	-42	-29	-15	-00	+15	+29	+42	+51	+57	+59	0.0
0.5	03	57	59	56	50	39	26	12	+03	18	32	44	52	57	0.5
1.0	05	53	58	58	54	47	37	24	-10	+05	20	34	45	53	1.0
1.5	08	45	53	57	57	53	45	35	22	-07	+07	22	35	45	1.5
2.0	10	36	46	52	55	55	51	43	32	19	-06	+09	23	36	2.0
2.5	11	24	36	45	52	54	54	49	42	31	18	-04	+11	24	2.5
3.0	12	- 11	25	36	45	51	54	53	49	40	30	17	-03	+11	3.0
3.5	12	+ 02	-12	25	37	46	51	54	52	48	39	29	16	-02	3.5
4.0	12	15	+02	-13	26	37	46	52	54	53	48	39	29	15	4.0
4.5	11	28	15	00	14	27	39	48	53	55	53	48	40	28	4.5
5.0	09	39	27	+14	-01	15	29	40	49	55	56	54	48	39	5.0
5.5	07	48	39	26	+12	-02	18	31	42	51	56	57	55	48	5.5
6.0	05	54	48	37	24	+10	-05	21	33	45	53	57	59	54	6.0
6.5	-.002	58	54	47	36	22	+07	-08	23	36	47	55	59	58	6.5
7.0	+.001	59	58	53	45	33	19	+04	-11	25	39	49	56	59	7.0
7.5	04	56	59	57	52	42	30	16	+01	14	28	41	50	56	7.5
8.0	06	51	58	58	55	49	39	28	14	-01	16	30	42	51	8.0
8.5	09	42	51	55	57	54	47	37	25	+11	-03	18	31	42	8.5
9.0	10	32	43	50	55	55	52	45	36	23	+09	-05	20	32	9.0
9.5	12	20	33	43	50	54	54	51	44	34	22	+08	-07	20	9.5
10.0	12	+ 07	21	32	43	50	53	53	50	43	33	21	+07	-07	10.0
10.5	12	- 07	+07	21	33	43	50	53	53	50	43	32	21	+07	10.5
11.0	12	20	-07	+08	22	34	44	51	54	54	50	43	33	20	11.0
11.5	10	32	20	-05	+09	23	36	45	52	55	55	50	43	32	11.5
12.0	09	42	31	18	-03	+11	25	37	47	54	57	55	51	42	12.0
12.5	06	51	43	30	16	-01	14	27	39	49	55	58	58	51	12.5
13.0	04	56	50	41	28	14	+01	16	31	42	52	57	59	56	13.0
13.5	+ 001	59	56	49	39	26	-11	+04	19	32	45	53	58	59	13.5
14.0	-.002	-.0058	-59	-55	-47	-36	-23	-08	+07	+22	+36	+46	+54	+58	14.0
		12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	24h	

Arg. (☾ − Γ′)	$\Delta' a$ ☾	$\Delta''' a$ ☾						
		0h 12h	1h 11h	2h 10h	3h 9h	4h 8h	5h 7h	6h 6h
d	s	s						
0	+.000	.0000	+0	+0	+0	+0	+0	+0
1	1	0	1	2	3	4	4	4
2	2	0	2	4	6	7	8	8
3	3	0	3	6	8	10	11	11
4	3	0	4	7	10	12	14	14
5	4	0	4	8	11	14	16	16
6	4	0	5	9	13	15	17	18
7	4	0	5	9	13	16	18	18
8	4	0	4	9	12	15	17	17
9	4	0	4	8	11	14	15	16
10	3	0	3	7	10	12	13	14
11	2	0	3	5	8	9	10	11
12	2	0	2	4	5	6	7	7
13	1	0	+1	+2	+2	+3	+3	+3
14	+.000	.0000	0	0	-1	-1	-1	-1
		12h 24h	13h 23h	14h 22h	15h 21h	16h 20h	17h 19h	18h 18h

Arg. (☾ − Γ′)	$\Delta' a$ ☾	$\Delta''' a$						
		0h 12h	1h 11h	2h 10h	3h 9h	4h 8h	5h 7h	6h 6h
d	s	s						
14	-.000	.0000	-0	-0	-1	-1	-1	-1
15	1	0	1	2	3	3	4	4
16	2	0	2	4	6	8	9	9
17	3	0	3	6	9	10	12	12
18	3	0	4	7	10	13	14	15
19	4	0	4	8	12	14	16	17
20	4	0	5	9	13	15	17	18
21	4	0	5	9	13	15	17	18
22	4	0	4	9	12	15	17	17
23	4	0	4	8	11	13	15	15
24	3	0	3	7	9	11	13	13
25	2	0	3	5	7	9	10	10
26	1	0	2	3	4	5	6	6
27	1	0	-1	-1	-2	-2	-2	-2
28	-.000	.0000	0	+1	+1	+2	+2	+2
		12h 24h	13h 23h	14h 22h	15h 21h	16h 20h	17h 19h	18h 18h

$\Delta'' a$ and $\Delta''' a$ are to be multiplied by tan δ and their signs changed when $a > 12^{2}$.
The Arguments, (2☾) and (☾ — Γ′,) may be found in Table IV.

TABLE VII.

TABLES FOR FINDING THE REDUCTIONS OF MEAN TO APPARENT DECLINATIONS WHICH DEPEND ON 2 ☾ AND ☾ −Γ′.

Hor. Arg = Star's Right Ascension.

Arg. (2☾)	Δ δ													Arg. (2☾)
	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	
d	″	″	″	″	″	″	″	″	″	″	″	″	″	d
0.0	-.00	+.02	+.04	+.06	+.08	+.08	+.09	+.08	+.08	+.06	+.04	+.02	+.00	0.0
0.5	.02	.00	.02	.05	.07	.08	.09	.09	.08	.07	.06	.04	.02	0.5
1.0	.04	-.01	+.01	.03	.05	.07	.08	.09	.09	.08	.07	.06	.04	1.0
1.5	.05	.03	-.01	+.01	.03	.05	.07	.08	.09	.08	.08	.07	.05	1.5
2.0	.06	.05	.03	-.01	+.01	.03	.05	.07	.08	.08	.08	.08	.06	2.0
2,5	.07	.06	.05	.03	-.01	+.02	.04	.05	.07	.08	.08	.08	.07	2.5
3.0	.08	.07	.06	.04	.03	.00	+.02	.04	.05	.07	.08	.08	.08	3.0
3.5	.08	.08	.07	.05	.04	-.02	-.01	+.02	.04	.05	.07	.08	.08	3.5
4.0	.08	.08	.08	.07	.06	.04	.02	.00	+.02	.04	.06	.07	.08	4.0
4.5	.07	.08	.08	.08	.08	.06	.05	-.02	.00	+.02	.04	.06	.07	4.5
5.0	.06	.07	.08	.08	.08	.07	.06	.04	-.02	.00	+.02	.04	.06	5.0
5.5	.05	.06	.08	.08	.09	.08	.07	.06	.04	-.02	.00	.03	.05	5.5
6.0	.03	.05	.07	.08	.09	.09	.08	.07	.06	.04	-.02	+.01	.03	6.0
6.5	-.01	.03	.05	.07	.08	.09	.09	.08	.07	.05	.03	-.01	+.01	6.5
7.0	+.01	-.02	.04	.06	.07	.08	.09	.09	.08	.07	.05	.03	- 01	7.0
7.5	.02	.00	-.02	.04	.06	.07	.08	.09	.08	.08	.06	.04	.02	7.5
8.0	.04	+.02	.00	-.02	.04	.06	.08	.08	.09	.08	.07	.06	.04	8.0
8.5	.06	.04	+.01	.00	-.03	.05	.06	.08	.08	.08	.08	.07	.06	8.5
9.0	.07	.05	.03	+.01	.01	.03	.05	.06	.08	.08	.08	.08	.07	9.0
9.5	.08	.07	.05	.03	+.01	-.01	.03	.05	.06	.07	.08	.08	.08	9.5
10.0	.08	.08	.06	.05	.03	+.01	-.01	.03	.05	.06	.07	.08	.08	10.0
10.5	.08	.08	.07	.06	.05	.03	+.01	-.01	.03	.05	.06	.07	.08	10.5
11.0	.08	.08	.08	.07	.06	.05	.03	+.01	-.01	.03	.05	.07	.08	11.0
11.5	.07	.08	.08	.08	.07	.06	.05	.03	+.01	-.01	.04	.05	.07	11.5
12.0	.06	.07	.08	.08	.08	.08	.06	.05	.03	+.01	-.02	.04	.06	12.0
12.5	.04	.06	.07	.08	.09	.08	.08	.06	.05	.02	.00	-.02	.04	12.5
13.0	+.02	.05	.06	.08	.09	.09	.08	.08	.06	.04	+.02	.00	-.02	13.0
13,5	.00	.03	.05	.07	.08	.09	.09	.08	.07	.06	.04	+.02	.00	13.5
14.0	-.01	+.01	+.03	+.05	+.07	+.08	+.09	+.09	+.08	+.07	+.05	+.03	+.01	14.0
	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	24h	

Arg. (☾ −Γ′)	Δ′ δ						
	0h 24h	1h 23h	2h 22h	3h 21h	4h 20h	5h 19h	6h 18h
d	″	″	″	″	″	″	″
0	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	0.00
1	.01	.01	.01	.00	.00	.00	.00
2	.01	.01	.01	.01	.01	.00	.00
3	.02	.02	.01	.01	.01	.00	.00
4	.02	.02	.02	.01	.01	.00	.00
5	.02	.02	.02	.02	.01	.01	.00
6	.03	.03	.02	.02	.01	.01	.00
7	.03	.03	.02	.02	.01	.01	.00
8	.03	.02	.02	.02	.01	.01	.00
9	.02	.02	.02	.02	.01	.01	.00
10	.02	.02	.02	.01	.01	.00	.00
11	.02	.02	.01	.01	.01	.00	.00
12	.01	.01	.01	.01	.01	.00	.00
13	.01	.00	.00	.00	.00	.00	·00
14	+0.00	+0.00	+0.00	+0.00	+0.00	0.00	0.00
	12h 12h	11h 13h	10h 14h	9h 15h	8h 16h	7h 17h	6h 18h

Arg. (☾ −Γ′)	Δ′ δ						
	0h 24h	1h 23h	2h 22h	3h 21h	4h 20h	5h 19h	6h 18h
d	″	″	″	″	″	″	″
14	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00
15	.01	.01	.01	.00	.00	.00	.00
16	.01	.01	.01	.01	.01	.00	.00
17	.02	.02	.02	.01	.01	.00	.00
18	.02	.02	.02	.02	.01	.01	.00
19	.02	.02	.02	.02	.01	.01	.00
20	.03	.03	.02	.02	.01	.01	.00
21	.03	.03	.02	.02	.01	.01	.00
22	.03	.02	.02	.02	.01	.01	.00
23	.02	.02	.02	.02	.01	.01	.00
24	.02	.02	.02	.01	.01	.00	.00
25	.01	.01	.01	.01	.01	.00	.00
26	.01	.01	.01	.01	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00
28	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00
	12h 12h	11h 13h	10h 14h	9h 15h	8h 16h	7h 17h	6h 18h

Change the signs of Δ δ and Δ′ δ when *a* is found at the bottom of the Table.
The Arguments, (2☾) and (☾ −Γ′), may be found in Table IV.

TABLE VIII.

TABLE GIVING, FOR SEVEN POLAR STARS, THE CORRECTIONS OF THE APPARENT PLACE WHICH DEPEND ON THE ARGUMENT 2☾ IN NUTATION.—1870.0.

☾ or ☾—180°.	α Urs. Min.		51 Cephei.		32 Camelop.		ε Urs. Min.		δ Urs. Min.		λ Urs. Min.		σ Octantis.		☾ or ☾—180°.
	R A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	
°	s	″	s	″	s	″	s	″	s	″	s	″	s	″	°
0	-.233	+.03	+.021	+.09	+.056	-.02	+.011	-.09	-.006	-.09	-.150	-.08	+.013	-.09	90
2	.238	.02	.012	.09	.056	.01	.013	.08	-.001	.09	.133	.08	-.018	.09	92
4	.242	.02	+.003	.09	.055	-.01	.015	.08	+.005	.09	.115	.08	.049	.09	94
6	.245	+.01	-.005	.09	.055	.00	.016	.08	.010	.09	.097	.08	.080	.09	96
8	.246	.00	.014	.09	.054	.00	.018	.08	.016	.09	.078	.09	.110	.09	98
10	-.246	.00	-.023	+.09	+.052	+.01	+.019	-.07	+.021	-.08	-.059	-.09	-.139	-.08	100
12	.246	-.01	.031	.09	.051	.01	.021	.07	.026	.08	.040	.09	.168	.08	102
14	.244	.01	.039	.08	.049	.02	.022	.07	.031	.08	-.020	.09	.196	.08	104
16	.241	.02	.048	.08	.047	.03	.023	.06	.036	.08	.000	.09	.224	.08	106
18	.237	.02	.056	.08	.045	.03	.024	.06	.041	.07	+.019	.09	.250	.07	108
20	-.230	-.03	-.063	+.08	+.042	+.04	+.025	-.05	+.046	-.07	+.039	-.08	-.275	-.07	110
22	.224	.03	.071	.07	.039	.04	.026	.05	.050	.07	.058	.08	.298	.07	112
24	.216	.04	.078	.07	.036	.05	.027	.04	.054	.06	.078	.08	.320	.06	114
26	.207	.04	.084	.07	.033	.05	.027	.04	.058	.06	.097	.08	.341	.06	116
28	.197	.05	.091	.06	.030	.06	.028	.03	.062	.05	.115	.08	.360	.05	118
30	-.187	-.05	-.096	+.06	+.027	+.06	+.028	-.02	+.065	-.05	+.133	-.07	-.377	-.05	120
32	.175	.06	.102	.05	.023	.06	.028	.02	.068	.04	.150	.07	.392	.04	122
34	.162	.06	.107	.05	.020	.07	.028	.01	.071	.04	.166	.07	.406	.03	124
36	.149	.07	.111	.04	.016	.07	.028	-.01	.073	.03	.182	.06	.417	.03	126
38	.135	.07	.115	.03	.012	.07	.028	.00	.075	.03	.196	.06	.426	.02	128
40	-.120	-.07	-.118	+.03	+.008	+.07	+.028	+.01	+.077	-.02	+.210	-.05	-.434	-.02	130
42	.105	.07	.120	.02	+.004	.08	.027	.01	.078	.01	.223	.05	.439	.01	132
44	.089	.08	.122	.02	.000	.08	.026	.02	.079	-.01	.235	.04	.442	-.01	134
46	.073	.08	.124	+.01	-.004	.08	.026	.02	.079	.00	.245	.04	.443	.00	136
48	.056	.08	.125	.00	.007	.08	.025	.03	.079	.00	.254	.03	.442	+.01	138
50	-.039	-.08	-.125	.00	-.011	+.08	+.024	+.04	+.079	+.01	+.262	-.02	-.438	+.01	140
52	.022	.08	.125	-.01	.015	.08	.023	.04	.078	.02	.269	.02	.433	.02	142
54	-.005	.08	.124	.01	.019	.08	.021	.05	.077	.02	.275	.01	.425	.02	144
56	+.012	.08	.122	.02	.022	.08	.020	.05	.075	.03	.279	-.01	.415	.03	146
58	.029	.08	.120	.03	.026	.08	.018	.06	.073	.03	.282	.00	.404	.04	148
60	+.046	-.08	-.117	-.03	-.029	+.08	+.017	+.06	+.071	+.04	+.283	+.01	-.390	+.04	150
62	.063	.08	.114	.04	.033	.08	.015	.07	.069	.04	.283	.01	.374	.05	152
64	.079	.08	.110	.04	.036	.07	.014	.07	.066	.05	.281	.02	.357	.05	154
66	.095	.08	.106	.05	.039	.07	.012	.07	.063	.05	.279	.02	.338	.06	156
68	.111	.07	.101	.05	.041	.07	.010	.08	.059	.06	.275	.03	.317	.06	158
70	+.126	-.07	-.095	-.06	-.044	+.06	+.008	+.08	+.055	+.06	+.269	+.03	-.294	+.07	160
72	.141	.07	.089	.06	.046	.06	.006	.08	.051	.07	.263	.04	.271	.07	162
74	.154	.06	.083	.07	.048	.06	.004	.08	.047	.07	.255	.04	.245	.07	164
76	.167	.06	.076	.07	.050	.05	+.002	.08	.043	.08	.245	.05	.219	.08	166
78	.180	.06	.069	.07	.052	.05	.000	.09	.038	.08	.235	.05	.192	.08	168
80	+.191	-.05	-.062	-.08	-.053	+.04	-.002	+.09	+.033	+.08	+.223	+.06	-.163	+.08	170
82	.201	.05	.054	.08	.054	.04	.004	.09	.028	.08	.210	.06	.134	.08	172
84	.211	.04	.046	.08	.055	.03	.006	.09	.023	.09	.197	.07	.105	.09	174
86	.219	.04	.038	.08	.056	.03	.008	.09	.017	.09	.182	.07	.074	.09	176
88	.226	.03	.029	.09	.056	.02	.010	.09	.012	.09	.166	.08	.044	.09	178
90	+.233	-.03	-.021	-.09	-.056	+.02	-.011	+.09	+.006	+.09	+.150	+.08	-.013	+.09	180

NOTE.—When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed. The Moon's Mean Longitude, ☾, may be found on page 344.